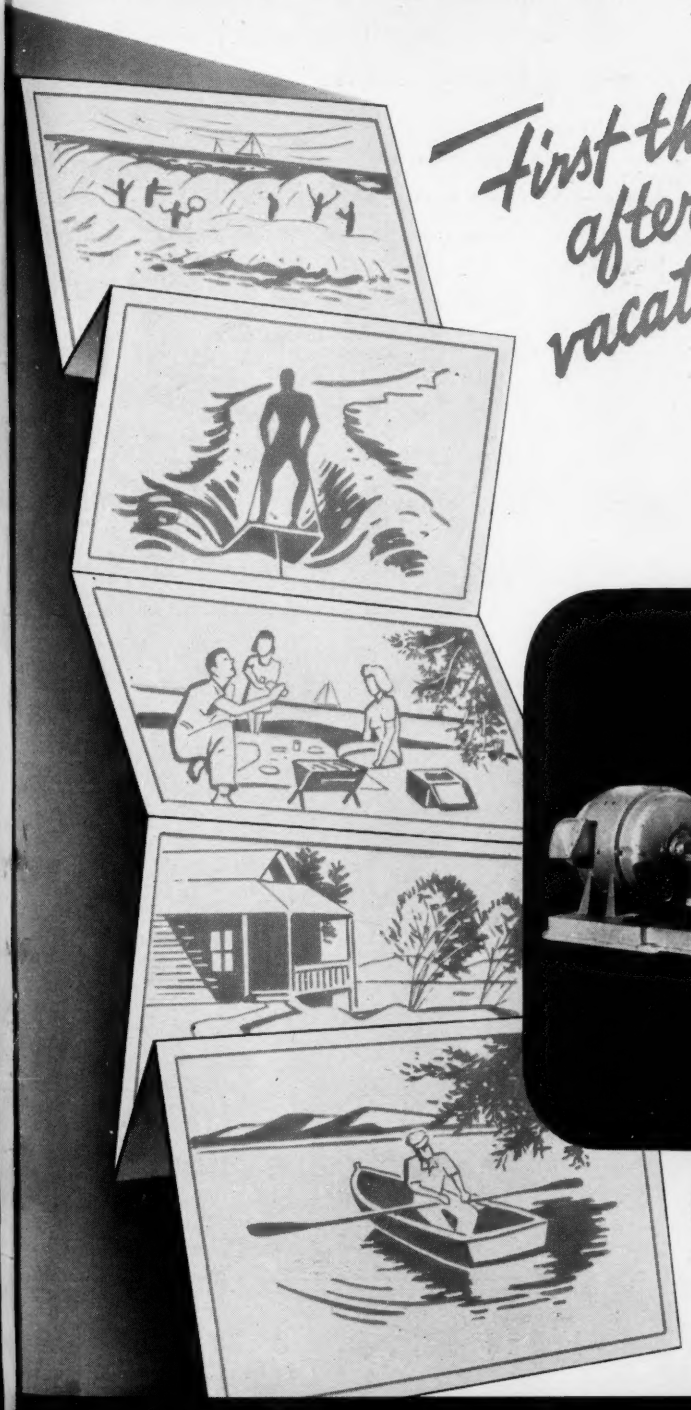
WIRE AND WIRE PRODUCTS

AUGUST 1949



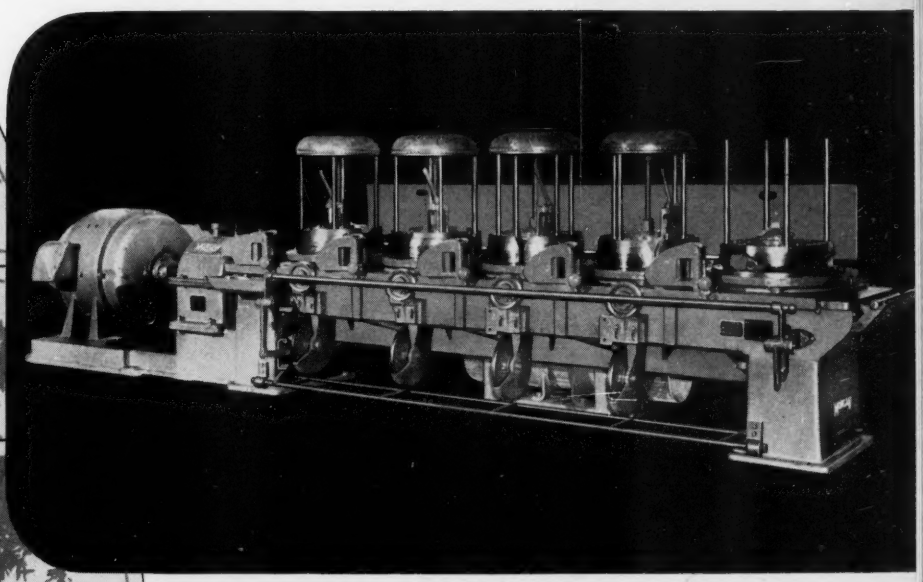
first thing after vacation-

Let us tell you how

MORGAN CONNOR

WIRE MACHINES

cut costs—improve quality—
protect your markets



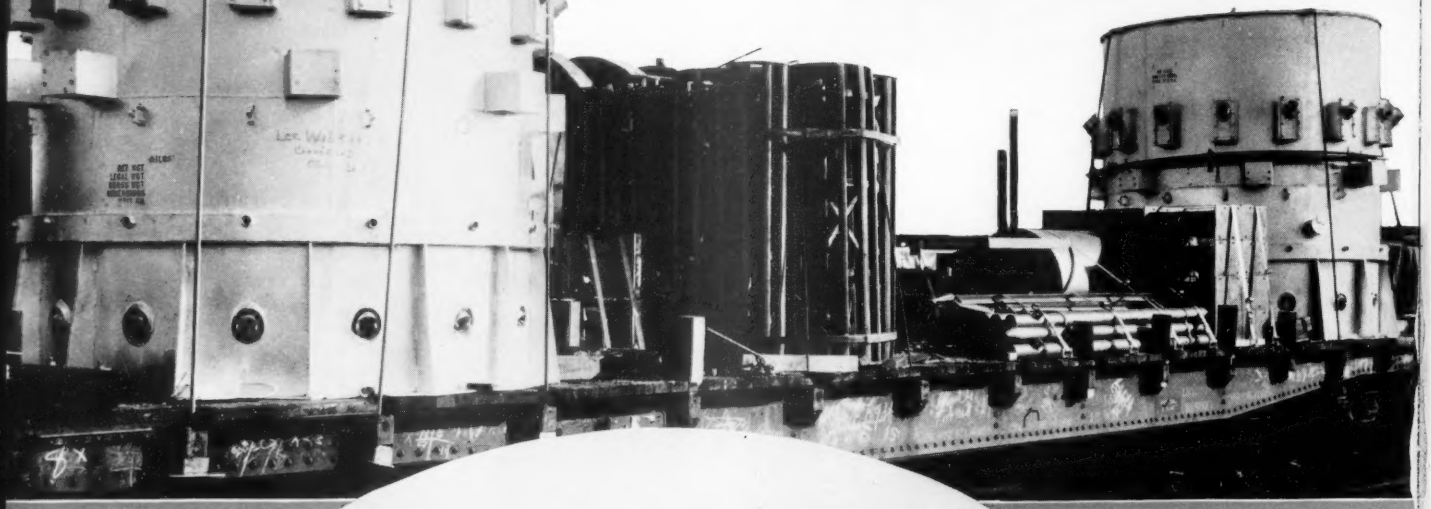
MORGAN CONSTRUCTION CO., Worcester, Mass.

OFFICIAL PUBLICATION OF THE WIRE ASSOCIATION

PACKED for EXPORT

THE NEXT destination of these Wilson wire annealing furnaces may be Buenos Aires, Rotterdam, Genoa or Bombay!

IN USE throughout the world, Wilson wire annealing furnaces are designed to operate with gas, oil or electricity, whichever is available and least expensive.



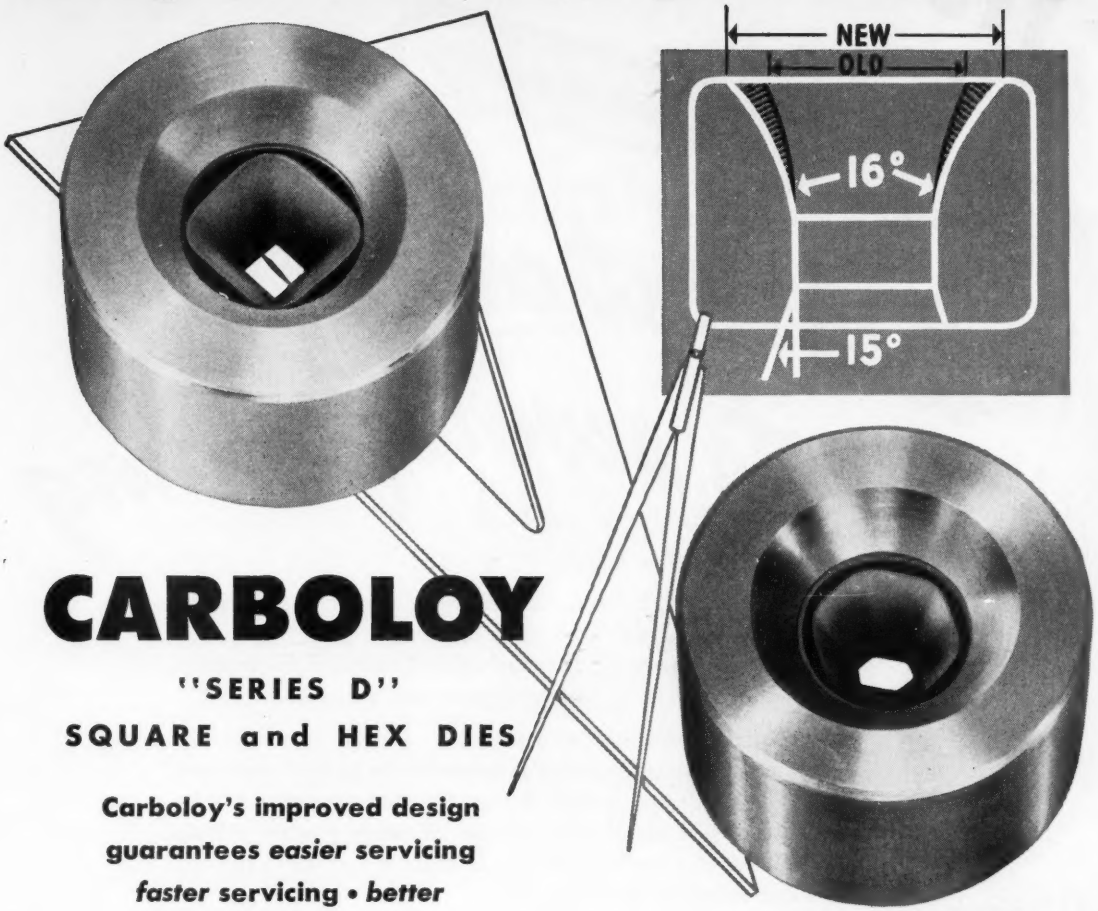
Lee Wilson

ENGINEERING Co., Inc.

20005 WEST LAKE ROAD • CLEVELAND, OHIO

Telephone ACademy 4670

Shaped to save you money



CARBOLOY

"SERIES D"

SQUARE and HEX DIES

Carboloy's improved design guarantees *easier* servicing *faster* servicing • *better* lubrication

IF YOU WANT to get the most for your shape-die dollar, better look into these Carboloy "Series D" shape dies in a hurry.

What's the answer? Why Carboloy's outstanding *design improvements!* Enlarged bell openings make internal contours easier to reach, easier to service. There's less stock to remove from the entering angles, which speeds servicing. And better lubrication is assured since stock entering the die can carry a heavier coating of lubricant.

Carboloy offers other important advantages

There are plenty of other plus values with Carboloy shape dies—longer die life, increased tonnage, less servicing downtime, higher drawing speed. Taken all together they mean increased production, better performance, lower costs.

And here's a tip: you can save time and money by ordering rough-drilled dies from stock and doing your own finishing.

Get these big advantages too!

- Extra-long life
- Fewer rejects
- Lower cost per piece
- High surface finish
- Closer tolerances on drawn parts

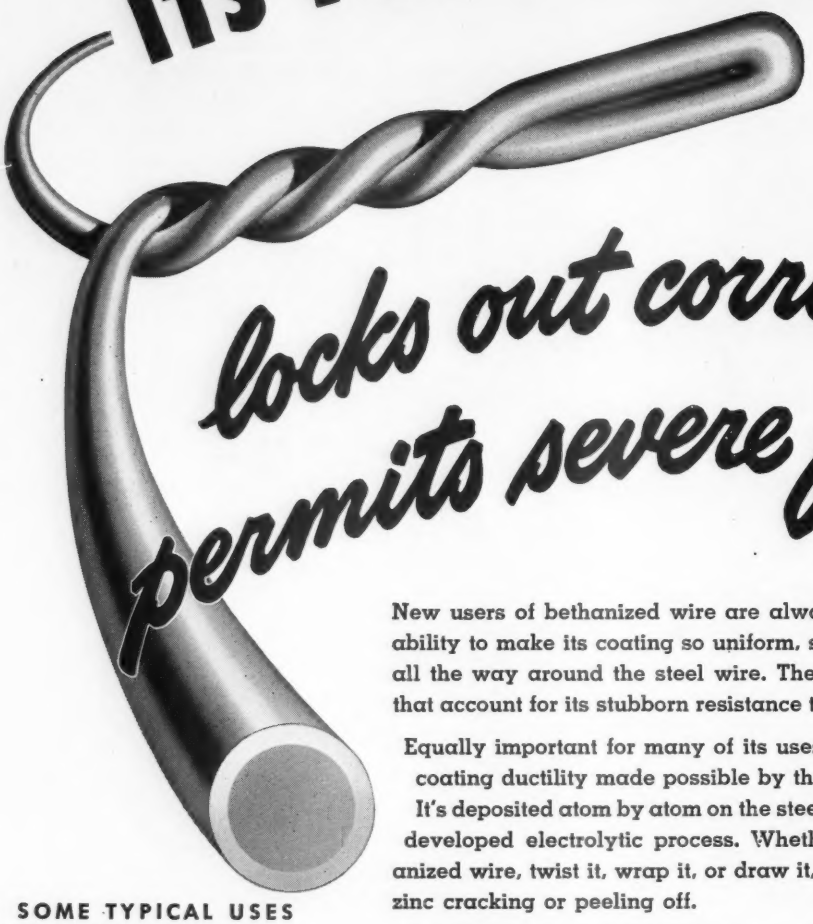
Why not start getting these benefits on your jobs now? Write for FREE Carboloy Die Catalog, D-126.

CARBOLOY COMPANY, INC.

11171 E. 8 Mile Street, Detroit 32, Michigan

CARBOLOY® CEMENTED CARBIDE **SHAPE DIES**

ITS PURE ZINC ARMOR



locks out corrosion... permits severe forming

New users of bethanized wire are always amazed by our ability to make its coating so uniform, so perfectly bonded all the way around the steel wire. These are the features that account for its stubborn resistance to corrosion.

Equally important for many of its uses is the exceptional coating ductility made possible by the 99.9-pct-pure zinc. It's deposited atom by atom on the steel wire in our highly-developed electrolytic process. Whether you bend bethanized wire, twist it, wrap it, or draw it, you won't see any zinc cracking or peeling off.

The smooth luster of bethanized wire adds sales appeal to your products. And its versatility makes it the answer for many jobs never before attempted with zinc-coated wire.

Whether you need hard- or soft-temper wire, standard, heavy, or extra-heavy zinc coatings, we suggest you get complete details from the nearest Bethlehem sales office.

SOME TYPICAL USES OF BETHANIZED WIRE:

Coil springs
Telephone wire — Barbed wire
Solid clothes line
Twisted wire brushes — Coat hangers
Wheel spokes
Cotter pins — Chain-link fence
Core for aluminum conductor (A.C.S.R.)
Pail bails — Paper clips
Helical springs
Bottle crate dividers
Conveyor belt fabrics — Wire rope
Fine wire items
Pump chain — Baskets
Snow fence — Bookbinding

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

★ Bethanized Wire ★

BETHLEHEM STEEL

WIRE & WIRE PRODUCTS, Vol. 24, No. 8, August, 1949. Publication Office, at One Sherman Ave., Jersey City 7, N. J. Executive Office, 300 Main Street, Stamford, Conn. Published monthly by the Quinn-Brown Publishing Corp., Richard E. Brown, President; R. S. Spengel, Secy. and Treas. Subscription price: U. S. $5.00; Canada, $5.00 per year; 50 cents per copy; Foreign, $7.50 per year. Entered as second class matter, January 10, 1949, at the Post Office, Jersey City, N. J., under Act of March 3, 1879.

up to 85% REDUCTION *on Stainless Steel* without Lead!

NO, Magnus isn't having a sale—it's STAINLESS STEEL we're talking about.

A brand new method of drawing STAINLESS STEEL! Not an old method with a "New Look," but a truly *NEW* process. Nothing like it has ever been done before.

YOU CAN GET THE LEAD OUT OF YOUR PLANTS! You can, actually, get the reductions you want—85% or more —WITHOUT LEAD!

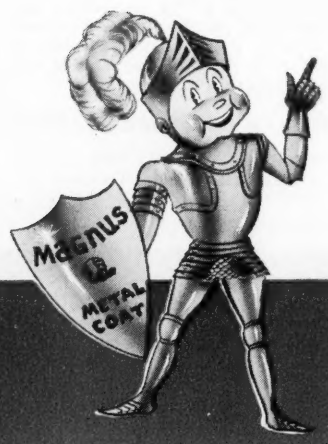
With Metalcoat #267, you can draw No. 5 STAINLESS STEEL rod down to the finest dimensions, with intermediate annealing, of course, and obtain a bright, beautiful satin-finish. Furthermore, *you can do it at no higher cost than drawing carbon wire!*

There's more to it, of course, than just the coating. There is a little matter of "Sixty Secret Seconds," during which we take the "cussedness" out of STAINLESS STEEL and teach it to pick up, and HOLD, the coating and lubricant as well as carbon steel does.

This "mysterious minute" makes all the difference in the world between drawing STAINLESS STEEL WIRE at infinite trouble and expense, and drawing it as cheaply and easily as high or low carbon steel wire.

Write today, and ask us to tell you about the "Sixty Secret Seconds."

Write today and ask us to tell you about the "SIXTY SECRET SECONDS"



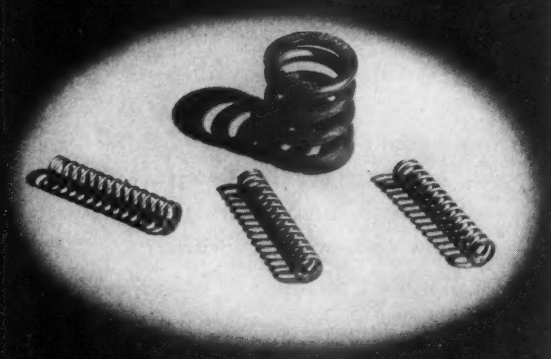
Metal Coating Division
MAGNUS CHEMICAL CO., INC.
188 South Avenue Garwood, N. J.

Cost Conscious?

Here's one sure way to reduce spring grinding costs . . *Specify* NORTON Discs!

Automotive Valve Springs

Grinding both ends of automotive valve springs on double-disc grinders is a typical production spring grinding operation which calls for discs of exactly the right specifications. Reports from many plants handling this operation prove that quality can be maintained — production increased — and costs lowered—with fast-cutting 57 ALUNDUM Discs (vitrified bonded, porous type, 57A246-L11VBEP).



Stainless Steel Springs

Another difficult spring grinding job—the grinding of heat-sensitive stainless steel springs—may be handled quickly and economically with cool-cutting Norton Discs of the sensational 32 ALUNDUM abrasive—32A36-K11VBEP.

Why not take advantage of the cost-cutting features of Norton discs and put them to work on each of your spring grinding jobs? They're available in all standard sizes (15" to 53" in diameter), and with all standard types of mountings.

Norton Company • Worcester 6, Mass.

Distributors In All Principal Cities
Consult Your Classified Telephone Directory

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NORTON ABRASIVES

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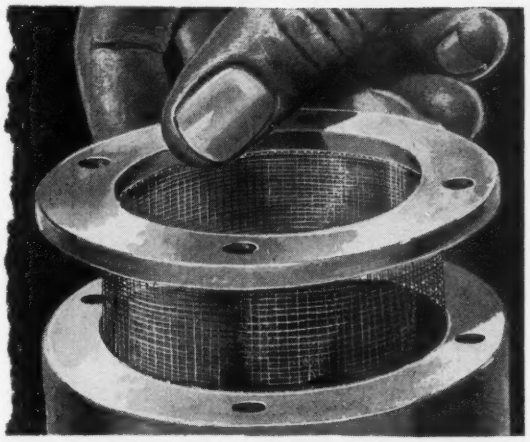
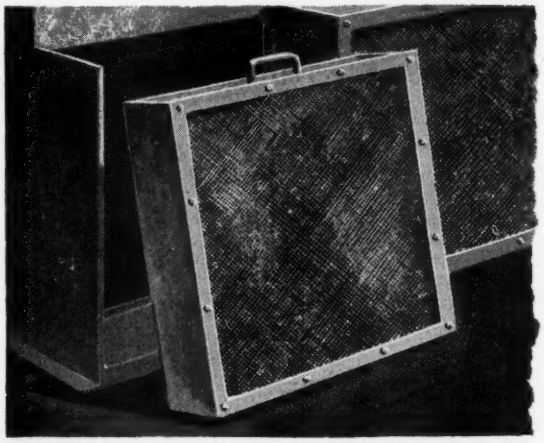
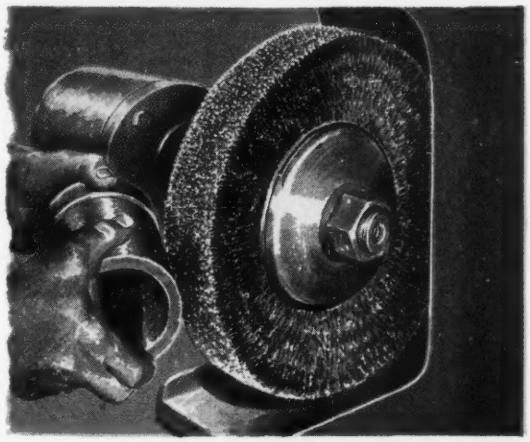


. . . tailored for every use





MAKING vegetable strainers? Air filters? Wire screens? Brushes? Books? Brooms? Butter cutters? Staples?

We can supply you with U·S·S Amerfine for those products (and for *any other* product that requires fine wire). And we can tailor this versatile wire to meet your needs exactly.

Our engineers and wire craftsmen will see to it that you get the proper grade of Amerfine. And we can supply it NOW — in the mill quantities you need.

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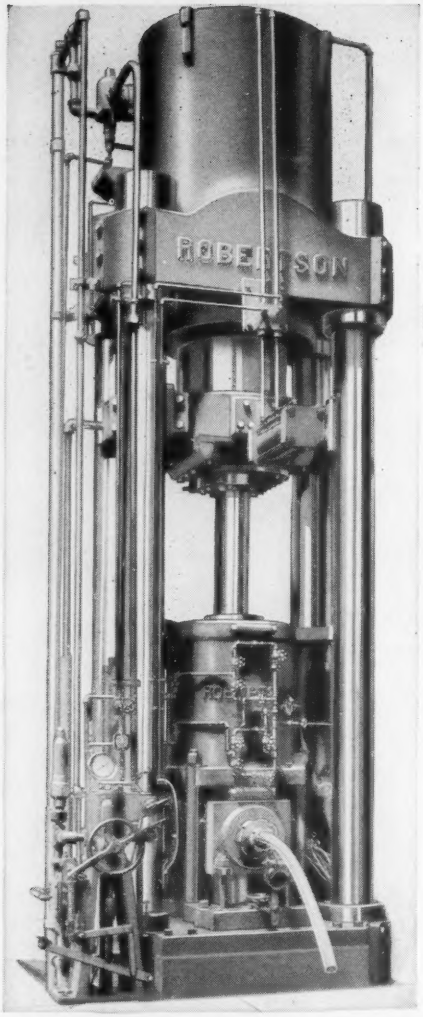
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

If you use fine wire . . . use Amerfine

USS

UNITED STATES STEEL



CABLE LEAD ENCASING PRESS

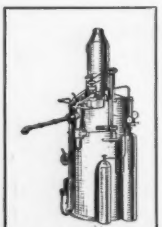
Robertson

A "LEADER SERVING LEADERS"

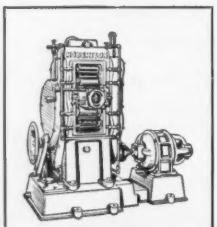
in the Hose and Cable Industries

What makes Robertson Equipment so widely used? It's *Quality . . . of design . . . of construction . . . of performance.* Robertson High Pressure Hydraulic Equipment is "custom-built" to conform to your exacting requirements . . . and guarantees maximum production of a uniform product.

For over 90 years, Robertson has been designing and building high pressure hydraulic equipment *exclusively* . . . and doing it so well that Robertson has become a *"leader serving leaders"* in the hose and cable industries.



Closed Lead Melting Pot



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JOHN Robertson COMPANY, INCORPORATED

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Designers and Builders of all Types of Lead Encasing Machinery

Since 1858

"Get it down cold"

—efficiently
—dependably
—economically

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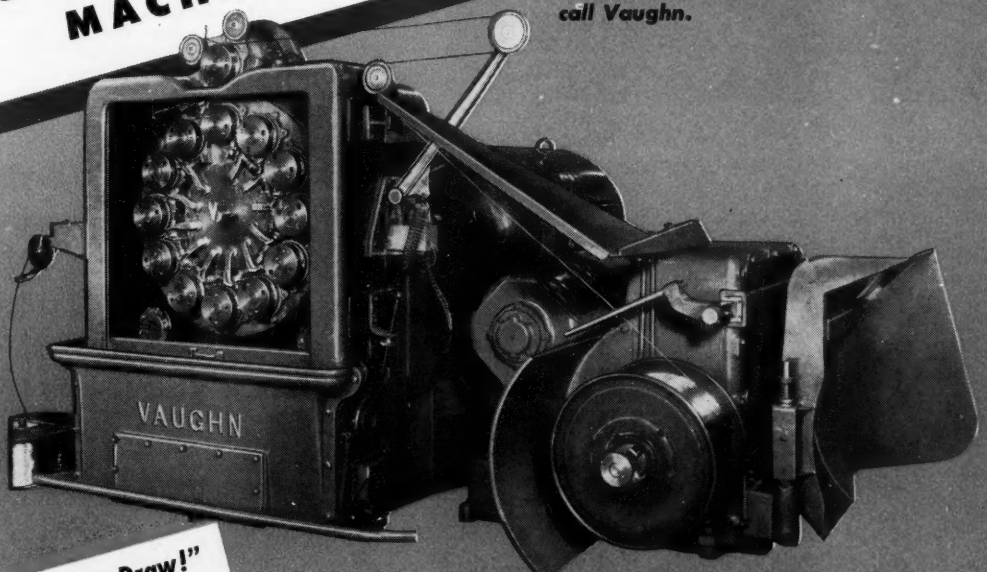
COLD DRAWING
MACHINERY

Vaughn Cold Drawing Machinery thrives on long, hard runs because we build tough *production-ability* into each and every unit. Vaughn flexibility and versatility take care of the short runs, too! For cold facts on cold drawing problems of every type, *call Vaughn.*



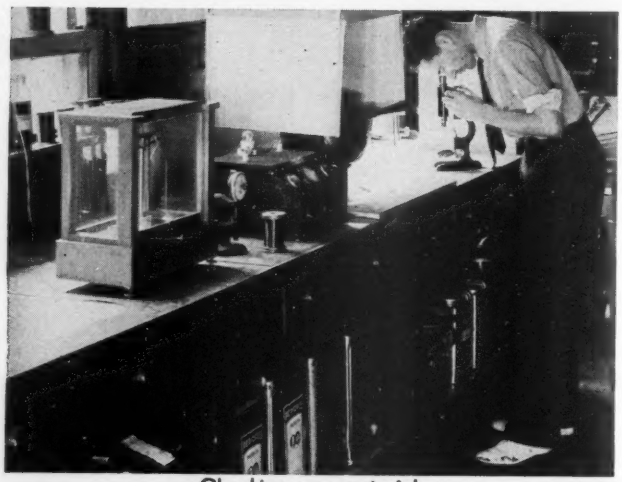
"Quick on the Draw!"
VAUGHN MACHINERY
PROFITABLY USED BY LEADING WIRE MILLS SINCE 1871

THE VAUGHN MACHINERY COMPANY
CUYAHOGA FALLS, OHIO, U. S. A.

COMPLETE COLD DRAWING EQUIPMENT—Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.

Custom built spools for high speed winding

Mercury testing for continuity of film



Checking raw materials

Don't "fool around" . . . USE DEPENDABLE WIRE PRODUCTS!

A product, too, is only as strong as its weakest part. Follow the practice of leading designers and engineers by specifying only service-giving wire . . . wire that has built up a reputation for "delivering the goods under fire."

Hudson Wire products, designed for discriminating manufacturers, has just such a reputation in the fine wire field. Offering greater flexibility and tensile strength, perfect laying at higher speeds, new coating methods and reduced coil dimensions without sacrificing electrical values. Hudson Wire products will probably lower your production costs considerably. Check these three points:

QUALITY — All phases of manufacture, from ingot to final processing, are carefully supervised and fulfilled in the same manner you would carry out in your own plant. There are no unimportant phases in the work.

UNIFORMITY — By mercury process tests, our engineers can guarantee perfect uniformity in wire; from the smallest to the largest order. No more variations in consistency, structure or electrical properties . . . every inch of wire exactly as specified, more than meeting your requirements.

SERVICE — If you have a wire problem, our complete design and engineering facilities are at your disposal without obligation. Send your specifications and blueprints for our recommendations; or if you are not quite ready, write for samples of these quality products.

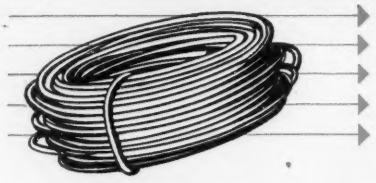
Enameled Copper, Enameled Iron, Enameled Alloy, Enameled Aluminum, Silk Covered, Cotton Covered, Celanese Covered, Glass Fibre Covered, Twisted Multiples, Parallel Multiples, and Litzendraht

HUDSON WIRE CO.

Winsted Division

WINSTED CONNECTICUT

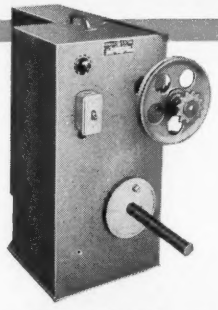
HOW TO TRANSFORM THIS



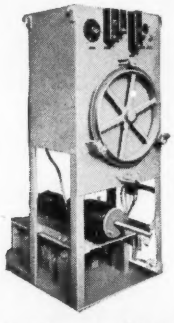
INTO THIS*

Quickly and at Less Cost

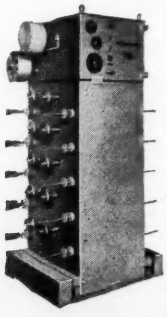
***OR REEL TO REEL**



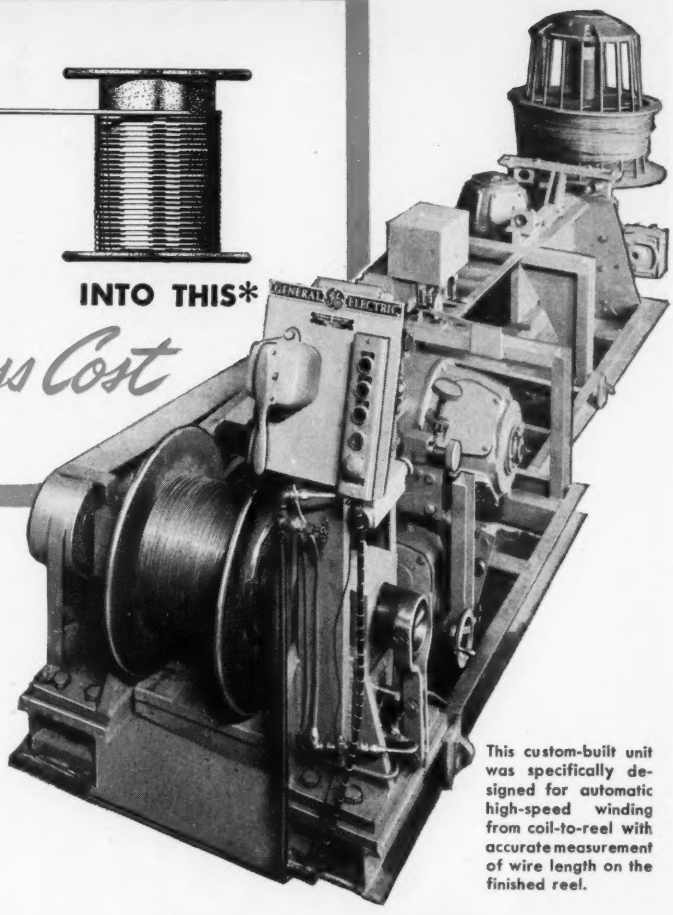
Individual winding heads with their own traverse mechanism. Can be combined with a capstan in any number to comprise a multi-head equipment.



Wire speed and tension is maintained automatically by electronic controls on this combination capstan and pickup mechanism.



Multi-head machines are available with capstan, gang-traverse mechanism, winding heads, and speed and tension control installed in a single unit.



This custom-built unit was specifically designed for automatic high-speed winding from coil-to-reel with accurate measurement of wire length on the finished reel.

Install G-E automatic WIRE-WINDING EQUIPMENT

There's a faster, better way to wind or rewind wire from coil-to-reel or reel-to-reel—with General Electric's new completely electrified automatic wire-winding equipment.

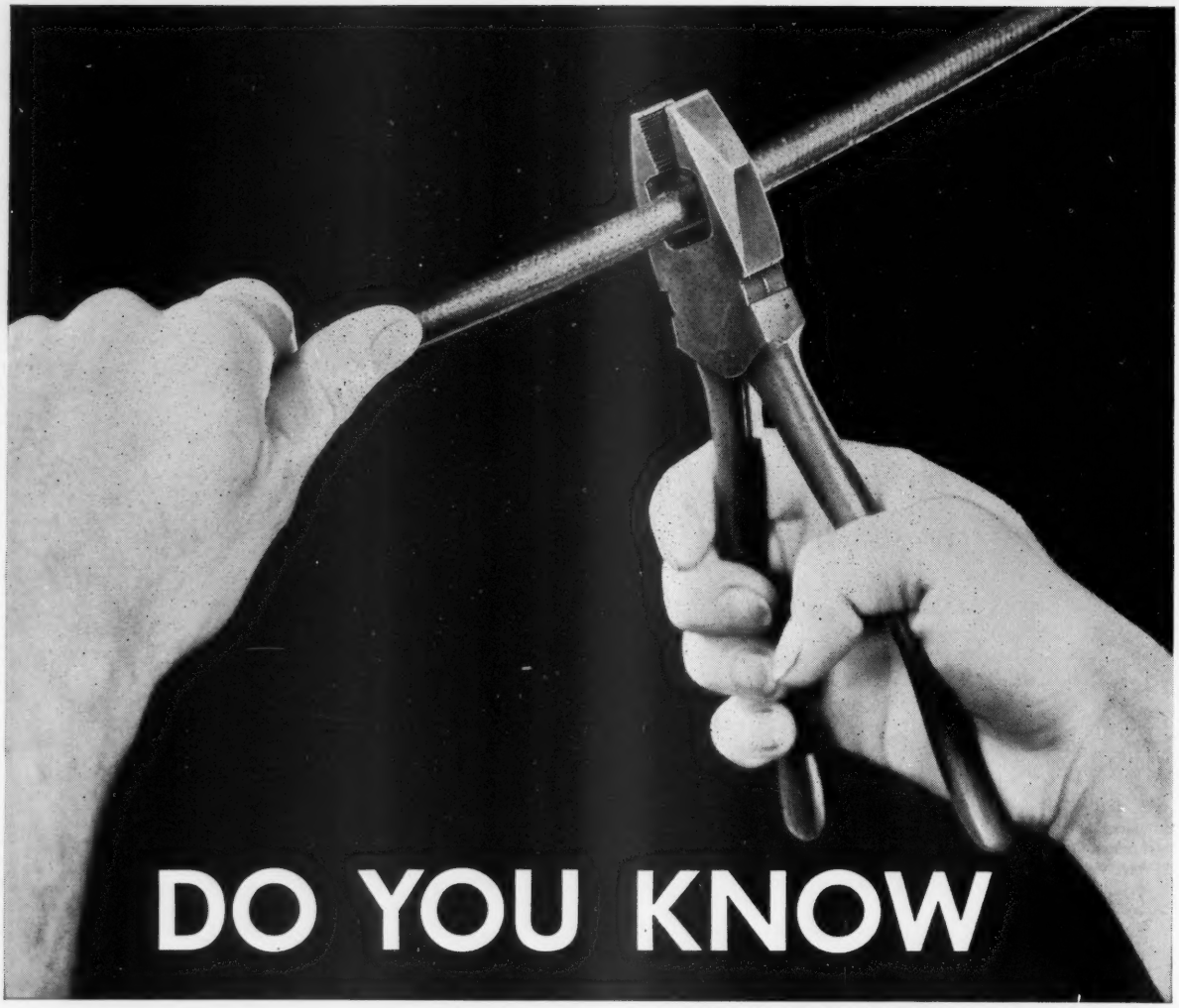
"Custom-tailored" from basic components to conform to your particular requirements, these complete equipments not only expedite wire-winding operations, but also make an invaluable contribution to your subsequent production by putting wire in more easily usable form. And their compact, "unit design" means important savings in valuable floor space.

Yes, if you wind wire in any shape or form (and most sizes) you can advantageously use G-E wire-winding equipment. To start the ball rolling on applying one or more of these equipments to your operations, simply contact your nearest G-E office—or write Sect. 720-4, Apparatus Department, General Electric Company, Schenectady 5, N. Y.

You can put your confidence in

GENERAL ELECTRIC

720-4



. . . THAT FIBERGLAS* 150's YARNS USED FOR OUTER BRAIDS OF NONMETALLIC-SHEATHED BUILDING CABLES OFFER:

Low Material Cost of Braid
Fewer Yarn Package Changes . . . *Less Braider Down Time*
Fewer Yarn Breaks . . . *Improved Braiding Efficiency*
Lower Cable Shipping Costs . . . *Lighter Weight*

For complete information about Fiberglas glass yarns for this use and other electrical uses, write Owens-Corning Fiberglas Corporation, Textile Products Division, Department 875, 16 East 56th Street, New York 22, N. Y.

OWENS-CORNING
FIBERGLAS
T.M. REG. U.S. PAT. OFF.
Yarns

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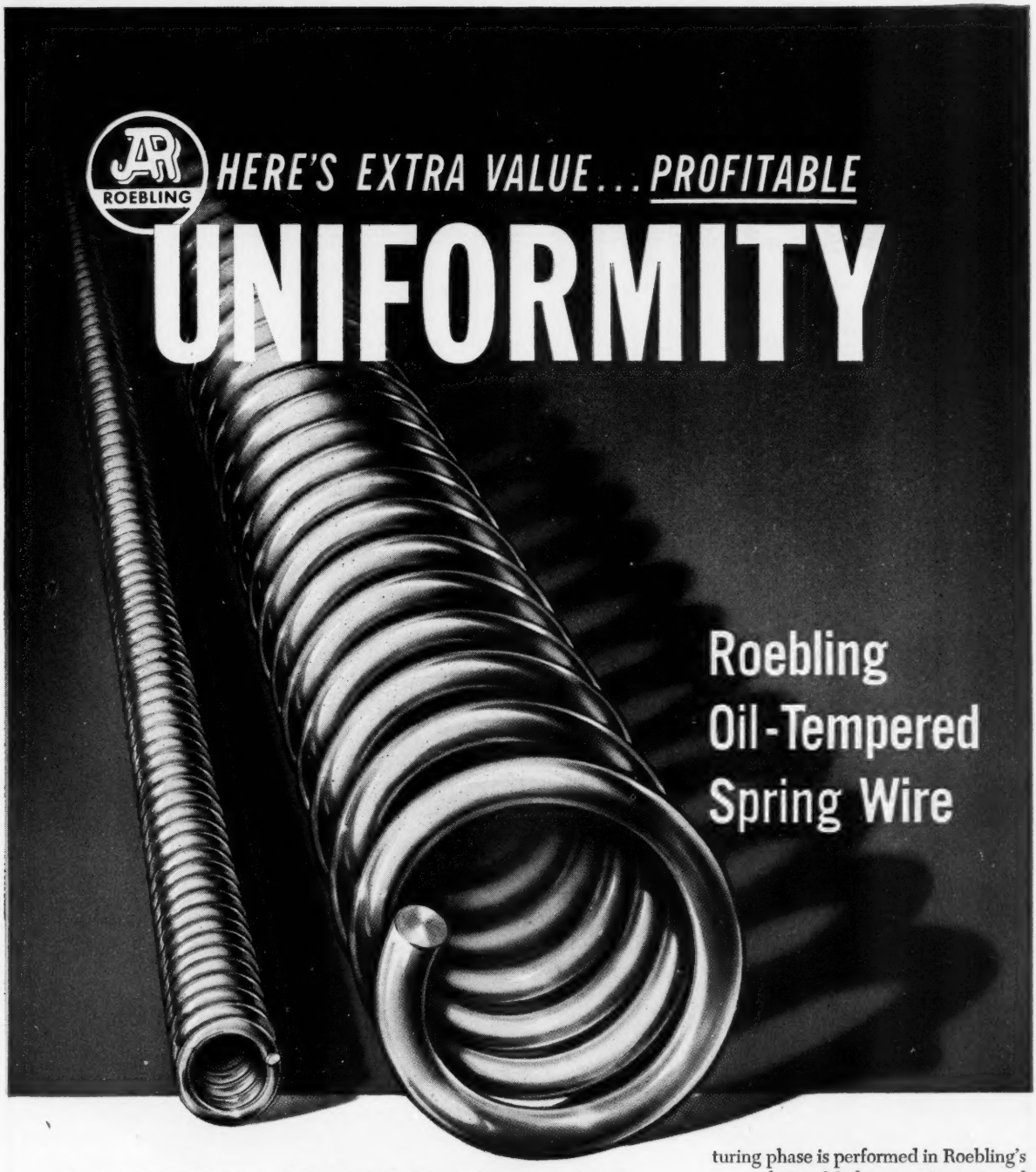


CUTS MACHINE STOPPAGES AND REJECTS

PRODUCTION GOES INTO HIGH with Roebling Oil-Tempered Spring Wire. Every inch is just like every other inch . . . same gauge and grain structure . . . same strength, hardness and finish. And more than that, the dependably uniform analysis of Roebling Spring Wire enables you to maintain your specified quality standards without variation.

Roebling Oil-Tempered Spring Wire, in the higher carbons, is available in all standard sizes. From making the steel to the finished product, every manufacturing phase is performed in Roebling's own plants. Modern equipment and techniques assure wire of topmost quality . . . and it's available now!

Your Roebling Field Man will be glad to help you select the right wire—round, flat or shaped—for top performance and economy in your own products. John A. Roebling's Sons Company, Trenton 2, New Jersey.

WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. ★ *Boston,* 51 Sleeper St. ★ *Chicago,* 5525 W. Roosevelt Rd. ★ *Cleveland,* 701 St. Clair Ave., N. E. ★ *Denver,* 1635 17th St. ★ *Houston,* 6216 Navigation Blvd. ★ *Los Angeles,* 216 S. Alameda St. ★ *New York,* 19 Rector St. ★ *Philadelphia,* 12 S. 12th St. ★ *Pittsburgh,* 855 W. North Ave. ★ *Portland, Ore.,* 1032 N. W. 14th Ave. ★ *San Francisco,* 1740 17th St. ★ *Seattle,* 900 First Ave.

ROEBLING

☆ *A CENTURY OF CONFIDENCE* ☆

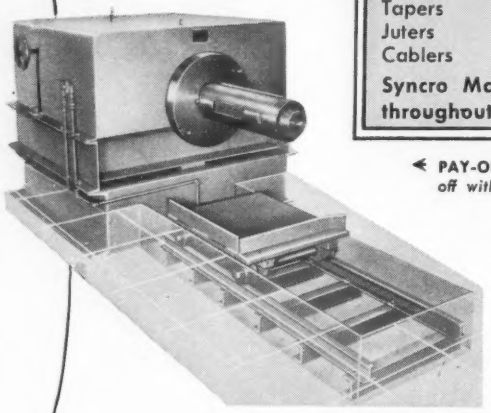
Designed and Built by SYNCRO

A COMPLETE LINE OF MACHINERY FOR THE WIRE AND CABLE INDUSTRY

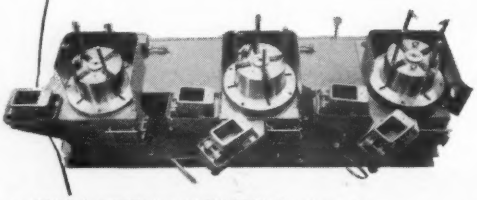
Wire Drawing Machines: Fine Gauge—Intermediate—Heavy

Stranders	Wire Rope Machines	Pay-Offs
Closers	Magnetic Slip Clutches	Respoolers
Tapers	Heavy Duty Take-Ups	Wire Insulators
Juters	Continuous Electric Annealers	Die Stringers
Cablers		Special Machinery

Syncro Machines are in active operation in leading wire plants throughout the world.

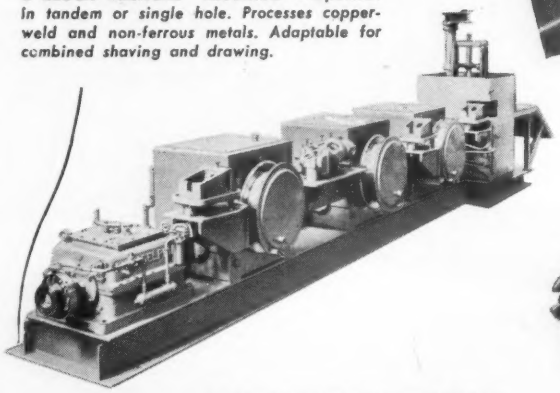


PAY-OFF REEL STAND—*Loads heavy reels for pay-off without overhead cranes or pick-up grapples.*

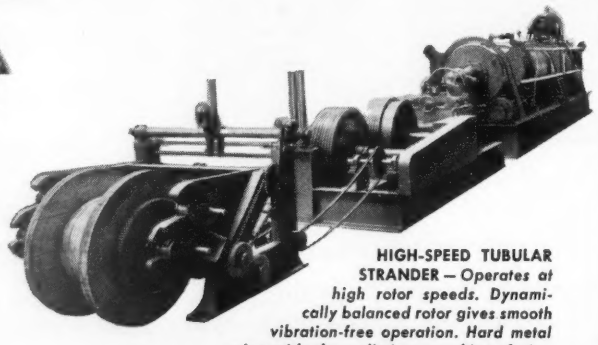


3 BLOCK VERTICAL "TROLLROD"—*Operates in tandem or single hole. Processes copper-weld and non-ferrous metals. Adaptable for combined shaving and drawing.*

WET CONTINUOUS FINE WIRE DRAWING MACHINE—*Produces wire as fine as .008" from maximum entering gauge of 090" in high or low carbon steel wire, non-ferrous materials or their alloys.*



4 BLOCK HORIZONTAL "TROLLROD" MACHINE *for all non-ferrous metals, heavy rod drawing, round or shaped trolley wire manufacture.*



HIGH-SPEED TUBULAR STRANDER—*Operates at high rotor speeds. Dynamically balanced rotor gives smooth vibration-free operation. Hard metal wire guide shoes eliminate marking of wire.*

SYNCRO

SYNCRO MACHINE COMPANY

611 Sayre Avenue — Perth Amboy, N. J.

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Winget-Syncro, Rochester, Kent, England

WISSCO ROPE WIRE

UNIFORM

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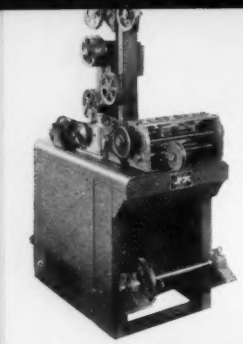
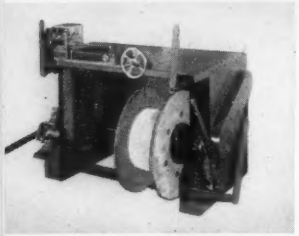
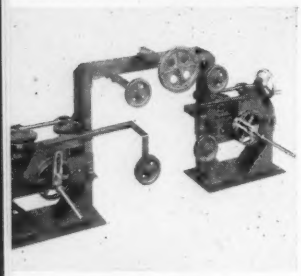


INGLE REEL TAKEUPS



ONTINUOUS TAKEUP



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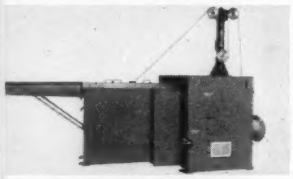

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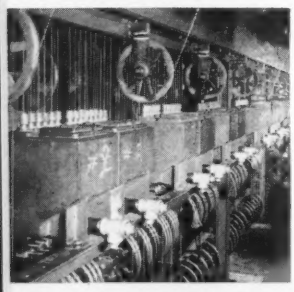
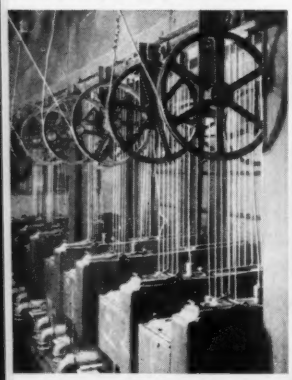


ACQUERING SYSTEM



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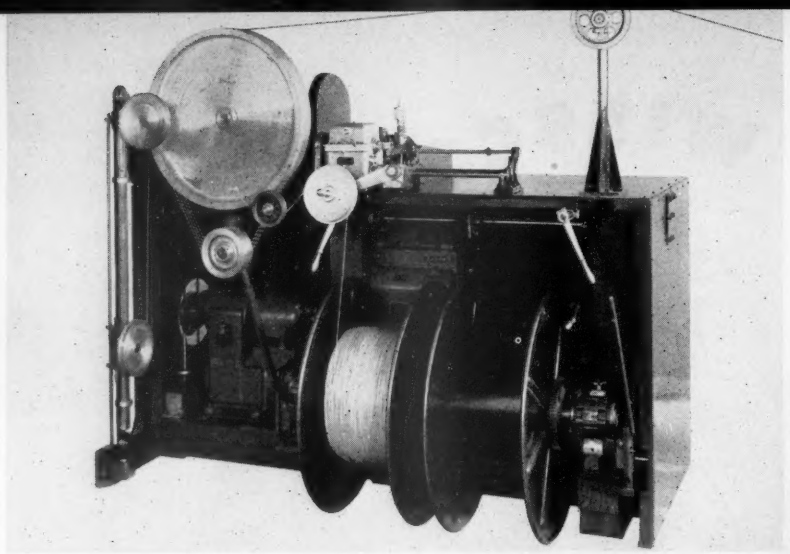

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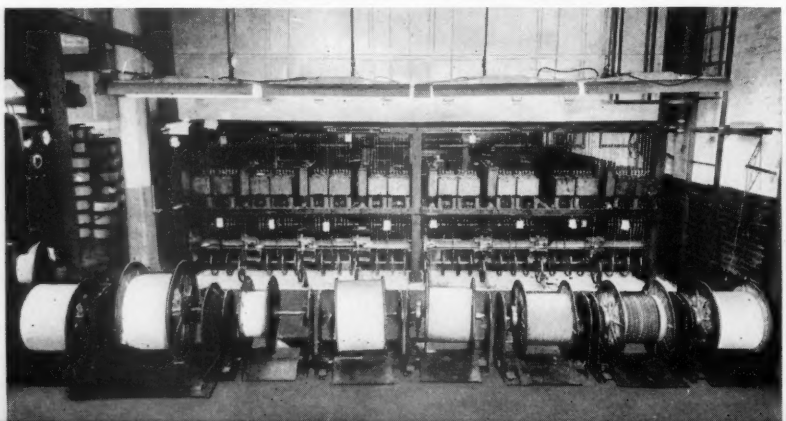
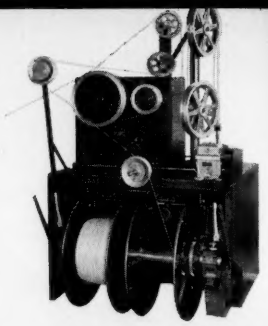
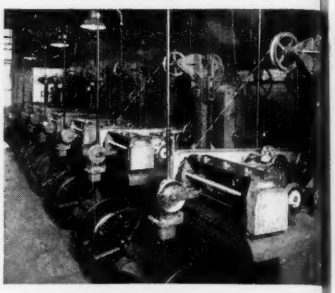
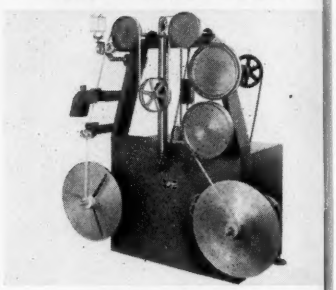




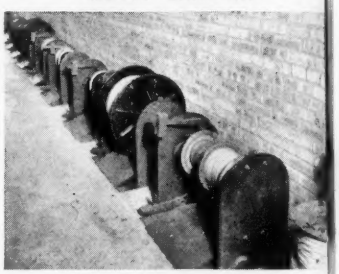
DUAL REEL TAKEUP



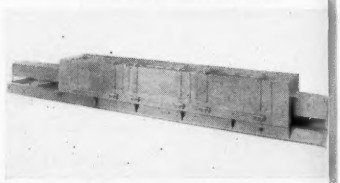
SINGLE REEL TAKEUP



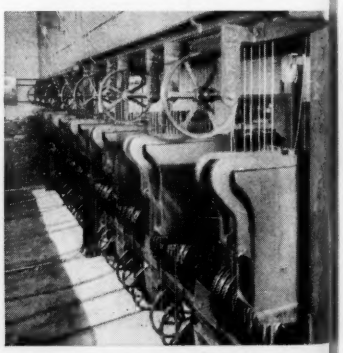
STRIP TAKEUP



PAYOFF STANDS



WIRE PRE-ANNEALER



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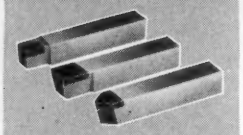
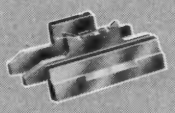


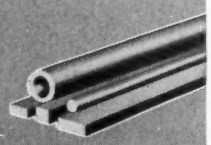
CUTTING TOOLS

DRAWING DIES



CENTERLESS BLADES

DRILL JIG BUSHINGS



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(weighing up to 1000 pounds)
for Strip or Sheet

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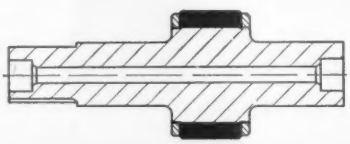

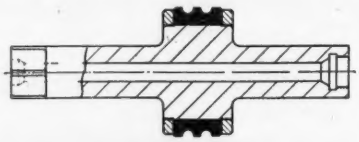

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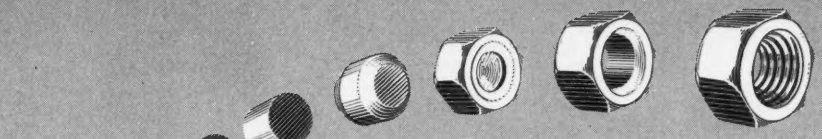
Scrapless Nut Wire

custom built to meet customers' requirements



SCRAPLESS Nut Quality Wire is not an ordinary steel for common applications. It is a custom built product designed to meet customers' specific requirements for cold heading, cold punching, cold expanding and threading, in the production of a variety of nut shapes on continuous heading machines.

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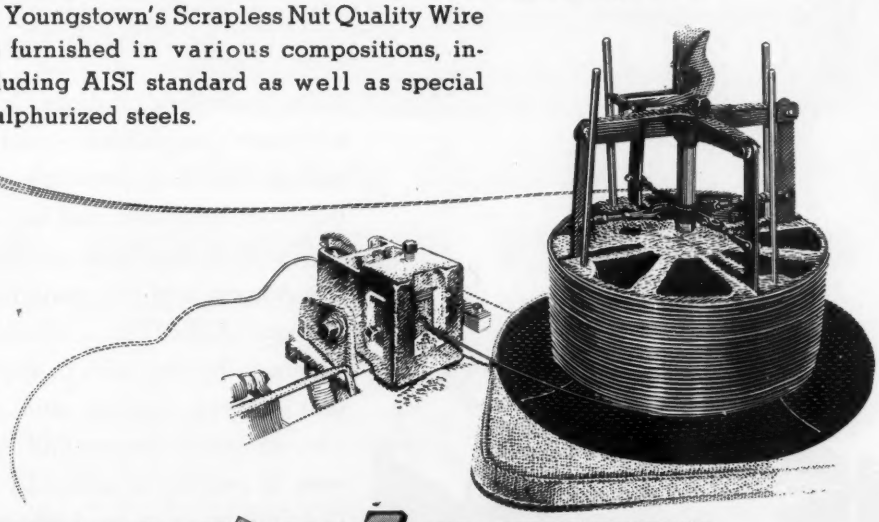
Youngstown's Scrapless Nut Quality Wire is furnished in various compositions, including AISI standard as well as special sulphurized steels.



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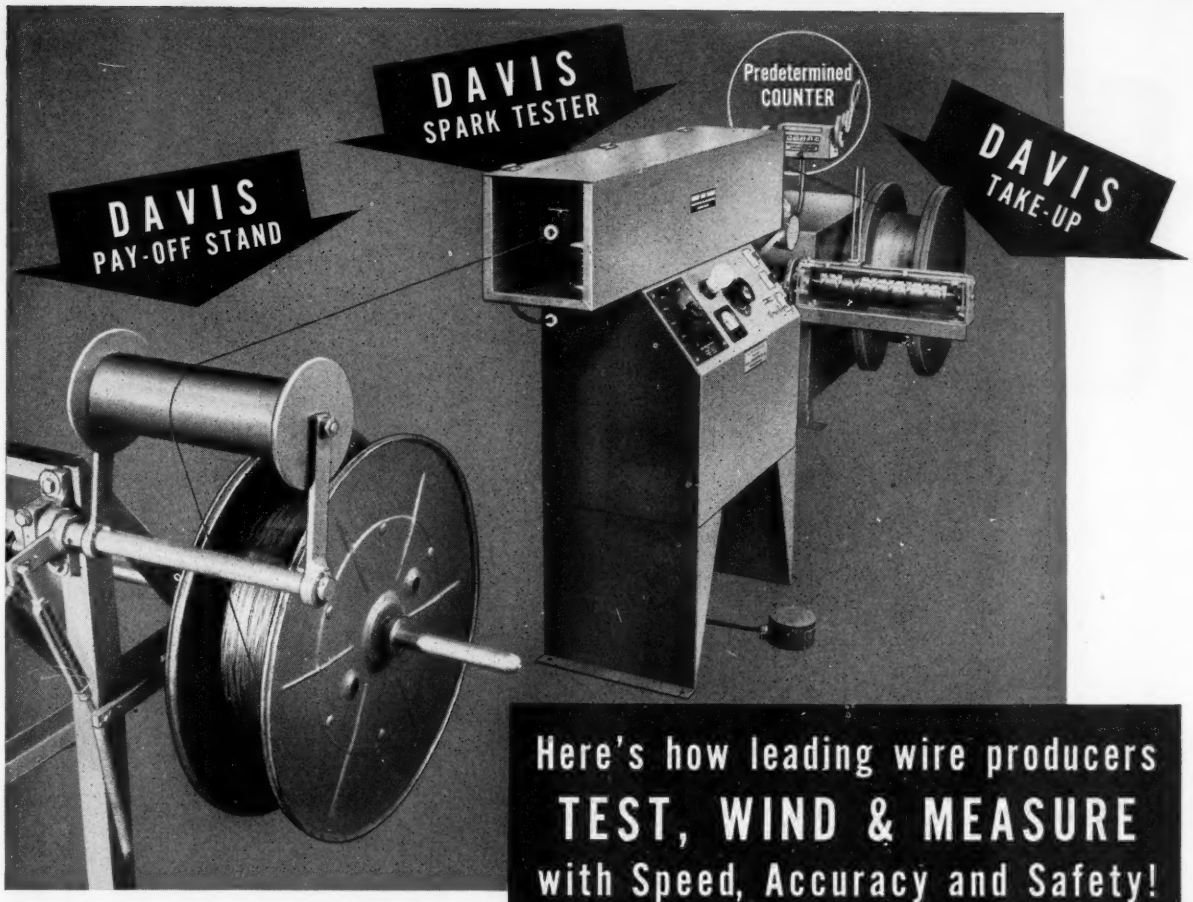

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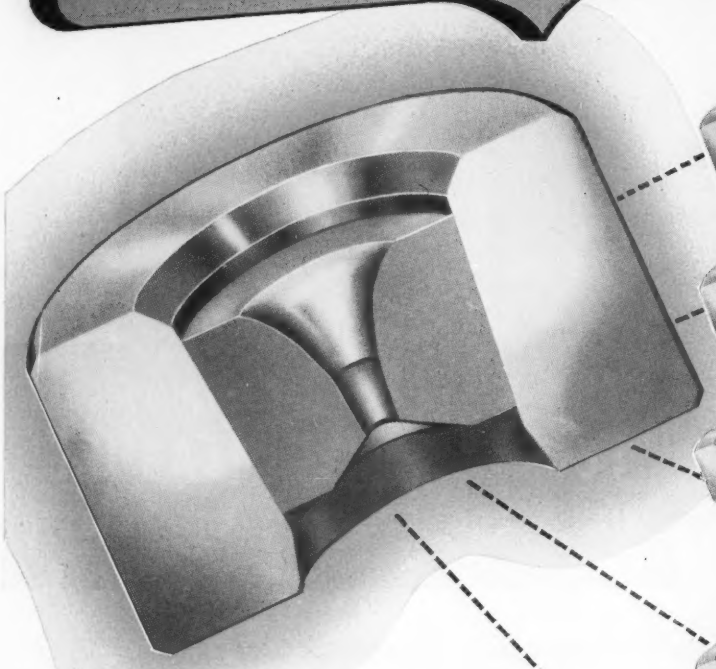

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The Wire Outlook

Recovery from the present decline of business will start when buyers—industrial or private—are convinced that prices have leveled off and steadied. The faster the readjustment to bed-rock prices, therefore, the sooner will the wheels of industry speed up.

The current declines do not mean that we are in a depression, but rather that an economic corrective to the post-war boom is taking place. Demand for the products of industry is never in a set ratio with respect to supply. It relates to cost. Every lowering of price levels brings a whole new opportunity for increased volume potentials, but not, however, as long as further declines are indicated or expected.

Labor leaders, bent on new demands, should bear in mind that the buying public is in no frame of mind to underwrite the costly pension schemes and other labor benefits that are proposed. And how will its rejecting these proposals be expressed? Simply by a refusal to pay the higher prices that will result. If it puts over its demands labor will be the first to suffer, as business in all likelihood would be further stagnated.

Because of high wages, this country is considerably out of step with the rest of the world on basic costs of production. As long as there were shortages abroad, the cost of goods was not a matter of too great concern. Now, however, with foreign industry on its feet, mounting complaints of injury due to increased buying from foreign sources with cheap-labor standards are flowing in to members of Congress and giving the Senate considerable concern over the foreign goods import.

Business levels are said to be approximately 12 per cent below the peaks of 1948. This is not serious from a readjustment standpoint, but attitude of mind toward current conditions can have a great deal to do with our ultimate destiny. Neither over-optimism nor pessimism will help. The first is doomed to disappointment; the second may help to project the recession into a depression. The latter is what the Communists would like to see and are working to bring about to provide them with their "opportunity".

By now practically all steel backlogs have disappeared and business is on a current, hand-to-mouth basis for all but a very few products. At mid-year supply was in approximate balance with demand. Basic steel production has been cut to such an extent that for some types of steel an actual undersupply is being reported. Steel prices are not expected to drop, as overhead is being spread over a smaller tonnage, raising unit costs.

Non-ferrous markets continue weak with prices tending downward. Zinc has had eleven reductions since March and copper nine, although the latter shows signs of firming as a result of stockpiling and greater activity on the part of insulated wire concerns. Of the various metals used in the wire industry, only tin and cadmium have stood firm.

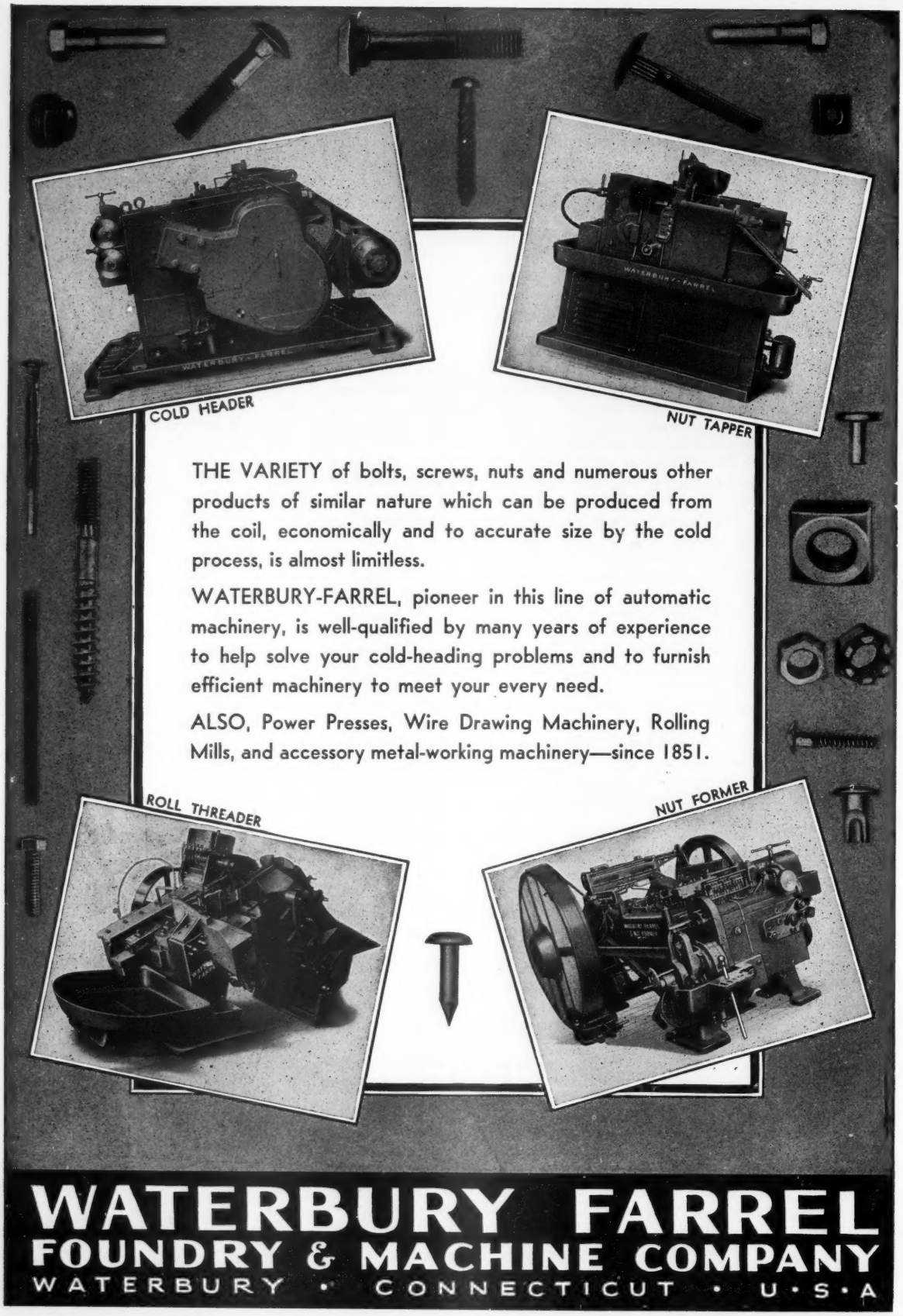
Heading wire, wire for the textile industry and merchant wire has shown further slackening, with manufacturers' wire demand holding fairly well. Woven wire fencing sales are good, with barbed wire moving slowly. Bolt and nut makers have around a three week backlog and new business is fair, but many producers have cut production time. All stranded items are readily available. Nails, while in good demand, are easier to get than a month ago. Some improvement in the demand for upholstery spring wire has been noted.

A bill to legalize the basing pricing system—the O'Mahoney Bill—has been approved by the House Judiciary Committee and passed by the Senate. It is hoped that its early enactment may clear away some of the confusion arising out of the Supreme Court's cement decision, that resulted in the general adoption of the F.O.B. pricing system.

Searching for straws in the wind as to the trend of events, we find one large specialty wire mill that was shut down in May now worrying about how to fill their orders. An electric wire plant, in the doldrums since the first of the year, experienced its first real influx of orders early in June. Zinc futures, in the face of continuing reductions up to the time of this writing, have shown the first increase since March. An equipment manufacturer who has had little or no new business since December, reports a sudden influx of orders and inquiries from good sources. Electrolytic copper sales ran 9000 tons higher in June than in May. Building is up 1% over 1948, where early estimates anticipated a 5% drop.

These may be isolated instances and the readjustment may not have run its full deflationary course, but they are worth noting.

—from the Editor's Desk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Vol. 24 AUGUST, 1949 No. 8

Designated as
Official Publication By The Wire Association

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WIRE and WIRE PRODUCTS is indexed regularly by
Engineering Index, Inc., New York, N. Y.

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Publication Office: Jersey City, N. J.
Executive Office: Stamford Trust Co. Bldg., 300 Main St., Stamford, Conn.

Annual Subscription, U. S. $5.00, Canada $5.00
50 Cents a Copy in U. S. Issued Monthly Foreign $7.50
October Convention Issue $1.00 a Copy
January Convention Discussions Issue $1.00 a Copy

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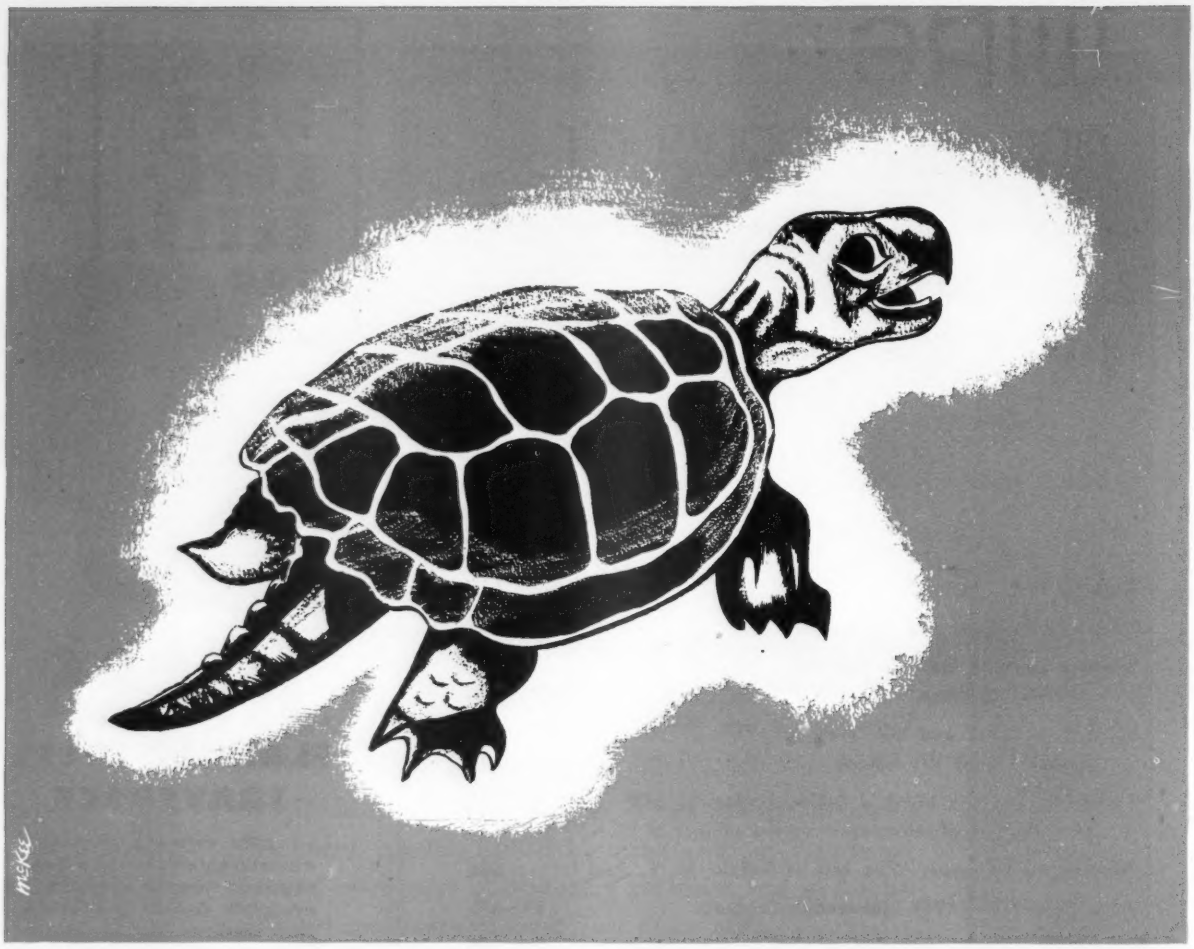

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Vol. 24 AUGUST, 1949 No. 8

ECA - ITS PURPOSES AND OPERATION

Extracts from a talk given before the National Association of Manufacturers by Paul G. Hoffman, Administrator of the Economics Cooperation Administration, in which he outlined the objectives of ECA and its workings.

"WITH the passage of the Foreign Assistance Act of 1948, a wholly new type of American foreign economic policy came into being. That Act, for the first time, gave formal recognition to the interdependence of the U. S. economy and the economy of Western Europe. More importantly, while recognizing this interdependence and proposing substantial further grants and loans to the nations of Western Europe, the Act specifically directed that our dollars be so employed that the nations would become self-sustaining prior to the termination of the aid program on June 30, 1952. That is the really startlingly new element in this program of foreign assistance.

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"BETWEEN World War I and World War II, we sent billions of dollars out of America in the form of gifts and loans to foreign nations. Since the end of World War II, more than twenty billions have left our shores. Mind you, I am not saying that these loans, gifts and grants should not have been made, but they have not been part of a comprehensive carefully conceived program aimed at helping to put our debtors on a solvent basis so they could pay their own way. Rather, our gifts and loans have been made on a spot basis to meet recurring emergencies. This time our dollars are going out under a planned program so to help the Europeans to help themselves that they will not need our further assistance.

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"A SECOND unique feature of **ECA's** operation is its completely unpolitical nature. We do the extraordinary thing of taking money from our taxpayers and spending it on people who are not voters in our own democracy. It took courage for any administration to propose this, and for any Congress to vote it. The benefits we get out of it are of course tremendous; but they are deferred, long-range benefits.

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"PERHAPS the most novel and striking feature of our aid to Europe under **ECA** is the way in which our dollars are made to do double duty in the way of development and reconstruction. It is highly important that this be understood, for it is at the very heart of the **ECA** operation.

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"I THINK it would be helpful to an understanding of the way our dollars work if you recall the situation which prevailed in most of the European nations when the Marshall Plan was first proposed. Prospective buyers, even though they had an ample supply of local currencies, were unable to purchase the food, raw materials, and machinery needed for rehabilitation because these essentials could be obtained only in the Western Hemisphere and only for dollars and dollar exchange was not available. Governments faced another kind of dilemma. They were unable to carry on desperately needed recovery projects because they did not have either the dollars or the local currency to pay for them. They could not obtain even the needed local currency except by imposing taxes so onerous that reviving industry would be crushed by them.

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"UNDER the wise provisions of the Foreign Assistance Act, our dollars are able to meet both of these needs at the same time—that of the prospective buyer, needing dollars, and that of the government, needing local currency.

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"THE goods that are shipped and paid for by **ECA** are bought at normal prices and through normal business channels by those who receive or use them, whether they be consumers, manufacturers, or government agencies. But payments are in foreign currency, and this currency is held

by the government concerned in what is called a "counterpart fund," meaning a national fund holding the equivalent—the counterpart—in foreign currency of the dollars paid to American producers for the goods shipped under the **ERP.** These counterpart funds are available to the governments for projects which they and the Administrator of **ECA** agree are useful and desirable contributions toward recovery. For each dollar, then, that the U. S. Government pays out, mostly to Americans, for commodities needed for European recovery, foreigners pay an equivalent amount of their own currency into a government fund that is used exclusively to speed their national recovery.

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"THUS while U. S. dollars have been used to finance shipments of cotton, grain, petroleum, and machinery to Italy, for example, those Italian citizens buying these products have paid Italian lira into a government fund that has been used by agreement with **ECA** to rebuild railroads, to drain marshes, to build bridges, to refit ocean liners, and so on. Likewise, French franc counterpart funds have been released in agreement with **ECA** for the construction of power plants and electric lines, and for modernizing coal mines.

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"ONE advantage is that by keeping the counterpart fund out of circulation, or by using it to retire public debt, a direct attack can be made on inflation in any country. Another advantage is that people who have to pay out their own hard-earned cash for things only buy what they really need. If gifts were being passed around, ten-ton tractors might find their way to five-acre farms. Thus, to the sincere desire of each nation to use its Marshall Plan dollars most intelligently there is added the healthy frugality of the average European businessman in handling his own money.

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"ANOTHER feature of **ECA**'s operation which should be explained is the series of formal bilateral agreements that govern the use of U. S. aid in the Marshall Plan countries.

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"IN these agreements, the European countries that receive our aid under the Marshall Plan have pledged themselves both in general and specific terms to do all that is possible, first, to help themselves, and second, to help each other back to recovery. They have pledged themselves to increase production, to stabilize currency and maintain stable rates of exchange, to balance budgets, to maintain internal financial stability, and to work with other countries towards breaking down the public and private barriers to trade, and towards increasing the interchange of goods and services among them.

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"THESE agreements do not give us the right to dictate to nations as to their form of economic organization. As long as they remain free nations, with a free ballot, the kind of economic organization under which they operate is their business. Conversely, what we do with our dollars is our business. Our only concern is whether the use to which our dollars is put produces maximum results in terms of recovery. Our economic system, on the basis of its record, is the best system on earth; but that does not give us the right to attempt to force it on any other nation.

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"WE conceive of ourselves as investment bankers, but our success will be measured not by the number of dollars we are paid back but by the degree of recovery that Europe attains. It is our task to invest your dollars so wisely that recovery will become an accomplished fact by the target date of June 30, 1952.

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"THE bilateral agreements under which we are operating have enabled us quickly to shift from relief to recovery because they have enabled us to insist that the Marshall Plan countries think their problems through and reduce their thinking to written plans. We now have complete annual programs from all the participating countries and we will soon have complete four-year recovery programs.

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"YOU can understand the importance of these plans if you realize that while we are insisting upon overall recovery progress, we are financing only segments of those programs. If we have not studied the overall recovery program of a nation and do not know what it is going to do with its own money as well as with its **ECA** dollars, we in **ECA** cannot be sure that we are spending your dollars wisely. Conversely, if we have studied and approved a carefully prepared overall program, it actually doesn't make too much difference which segment of that program we finance with **ECA** dollars.

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"IF Country "A" wants to finance its necessary machinery imports in fulfilling a total program and arranges for us to finance its imports of food, that is quite all right with us; or we would be just as happy to have it the other way about. The important thing is whether the total program adds up to recovery and whether their efforts are maximum and our contribution the minimum.

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"NOW I would like to discuss briefly how we are going about meeting our responsibility (1) to assist each of the participating nations in developing and carrying out its individual recovery program and (2) to make a reality of the pledges European nations have given us to work together and help each other to the greatest possible extent.

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"TO aid us in the task of helping individual countries, we have country missions in each of the participating countries except

Switzerland. Each mission is well staffed and advises as to how the dollars available to each country can be used to bring about the greatest contribution to recovery. We are proud of the men who head our missions, most of whom are well known to you. We are gratified but not surprised—because we know their caliber—at the speed with which they have acquired a comprehensive knowledge of the economies of the various countries.

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"HOW is the program getting along? We have recently received an official report from the **OEEC** which estimates probable production of certain vital materials in the Marshall Plan countries for the fiscal year 1948-49, and compares production during that period with production during the calendar year 1947. **OEEC** estimates that during the fiscal year ending 1949 the Marshall Plan countries will produce 420 million tons of coal, an increase of 14% over 1947. In metallurgical coke, which is essential to the production of steel, **OEEC** believes that there will be a total production of 43 million tons, or an increase of 32%. In the field of electric power, the indicated increase is 8% in kilowatt hours. Crude steel should be 50% higher. As for nitrogenous fertilizer, which is so important to the recovery of European agriculture, an increase of 27% is indicated, and I might add that this would represent a 50% increase over the average annual production during the prewar years of 1935-1938. It is estimated that potash production will be 29% higher during the fiscal year ending June 30, 1949 than in 1947; it is estimated that sulphur will be 15% greater, and wood pulp 23% greater. These I think are sufficient to indicate that the Marshall Plan countries are making substantial progress towards increasing production.

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"EVEN more important in its ultimate consequences than the production increases in individual countries of Europe is the real start that has been made towards greater economic cooperation among the nations of Europe —cooperation in breaking down the barriers that divide Europe into separate uneconomic segments.

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"THE goal is the free movement of goods and people throughout Europe. We expect that further efforts to break down the national barriers to increased productivity in Europe will multiply in scope and effectiveness, and we intend to encourage them with all of the force and all of the pressure we can muster. The important thing to note now, however, is that the centuries-old trend towards increased compartmentization in Europe has been reversed, that new and hopeful concepts are stirring Europe's imagination, and that new institutions are in the making.

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"PERHAPS more persuasive than the evidence I have given that the Marshall Plan is working, is the extreme effort at sabotage that the Communist agents of the Soviet Union are making against it. The recent coal strike in France is a good example of the lengths to which the Soviet Union is pushing its agents in foreign countries to block European recovery. Wrecking the Marshall Plan is the number one objective of Communism in Europe. I think this unintended tribute to the success of the program proves that we are on the right track and moving at a satisfactory rate of speed.

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"AS a final word, I would like to say that even more important than the tangible results of the Marshall Plan are its intangible gains. It was the announcement of the Marshall concept which rebuilt enough hope to halt the march of Communism in Italy and France in 1947. What would have happened to western Europe if Italy and France had gone Communistic is too grim to think about. It is the fact of Marshall Plan aid which is giving to the free peoples of Europe a continuing determination to resist totalitarianism and remain free. It is the new spirit of cooperation that has come to Europe as a direct result of the Marshall Plan that offers us our best hope for peace. The last world war occurred because the free nations failed to unite in their common interest. No aggressor will dare march against the free nations if they regain their strength and remain united. After all, with the people of free nations of western Europe and the North American continent lie all the advantages. There are more of us—approximately 500 million against their 250 million. We have 75% of the world's steel, 85% of the world's shipping, and most of the world's petroleum. Most of all, we have the advantage of the ingenuity and resourcefulness that come only to free men. All that is needed to avoid World War III is that we, the free people, plan together, work together, and stick together."

★ ★ ★

TO WIRE MILL MEN

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Getting Down to Getting Business

By John B. Stone, Washington, D. C.

"IN the end, of course, every manufacturer will have to sell his own product, either directly or through an appointed representative. He will still have to plug to capture his part of the overseas market, just as he puts forth his sales effort in the domestic market. What the small business division plans to do is to furnish, at a speed to be useful, as much information as possible both to and from overseas, to enable equal opportunity for all business."

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THAT was **Bert H. White,** consultant to **Paul G. Hoffman,** administrator of the Economic Cooperation Administration testifying recently before the small business subcommittee of the U. S. Senate committee on Banking and Currency.

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HE was attempting to explain to the committee why so much of the nearly six billion dollars worth of Marshall Plan business so far has gone to the great corporations and what can be done to see that small and medium manufacturers in the remaining three years of the program will get more of the remaining business which well may total between fifteen and twenty billion dollars in value.

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SINCE that appearance on Capitol Hill, this representative of **Wire and Wire Products** has visited the brand new air conditioned building at Connecticut Avenue and H Street in Washington which houses the headquarters staff of the Economic Cooperation Administration, has studied piles of documents and reports and has talked with a number of officials interested primarily in machines, machine products and small business.

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How the American Wire, Wire Products and Wire Machinery manufacturers can utilize ECA in the development of export business under the Marshall Plan. This analysis tells whom to contact and how to go about it.

HERE are some of the results of that study;

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THERE is a real chance for small manufacturers of wire making machinery and producers of wire and wire products to find business as a result of the Economic Cooperation program or, as it is popularly called, the Marshall Plan.

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THERE are many headaches involved in getting and keeping additional business as a result of the plan.

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BUT the Government is making a real effort to ease the pain and worry and some definite benefits to the small manufacturer may result.

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AND perhaps more important than any of these in the long run are two additional points brought out by the study;

1. The E.C.A. stimulates American business opportunity in many lines for business not actually covered by the E.C.A. allocations which might be worth while investigating for any small machine manufacturer.

2. Preoccupation with Marshall Plan projects and other major undertakings throughout the entire world on the part of the giants of American industry, has left many smaller pockets of opportunity available for small businessmen in all parts of the world. These might not be worth the time of the industrial giants but could serve as a very neat profit making venture for smaller concerns.

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FINALLY the study uncovered a considerable amount of practical information which may be of value to a wire machine manufacturer who wants to sell in foreign markets and doesn't know just how to set about it.

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WE shall discuss all these points but first, for clearer understanding, it is well to take a look at the Marshall Plan itself, what it is and how it works.

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THE Marshall Plan is based on the proposition that a strong and independent Western Europe is a primary necessity for the safety of the United States. It acquired that name after former Secretary of State **George C. Marshall** enunciated the basic conceptions of the plan in a speech at Harvard University.

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THE chaos and confusion of the immediate years after World War I were remembered. The troubles over uncollected War Loans were recalled. The success of Lend-Lease during World War II gave the clue.

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AMERICA decided that it would be a good investment for the United States to loan and give huge sums of money to finance European recovery if the countries of Europe could be persuaded to exert their utmost energies towards recovery themselves and could be persuaded to work together towards the common goal of economic and political security and stability.

★ ★ ★

THE Economic Cooperation Administration was established

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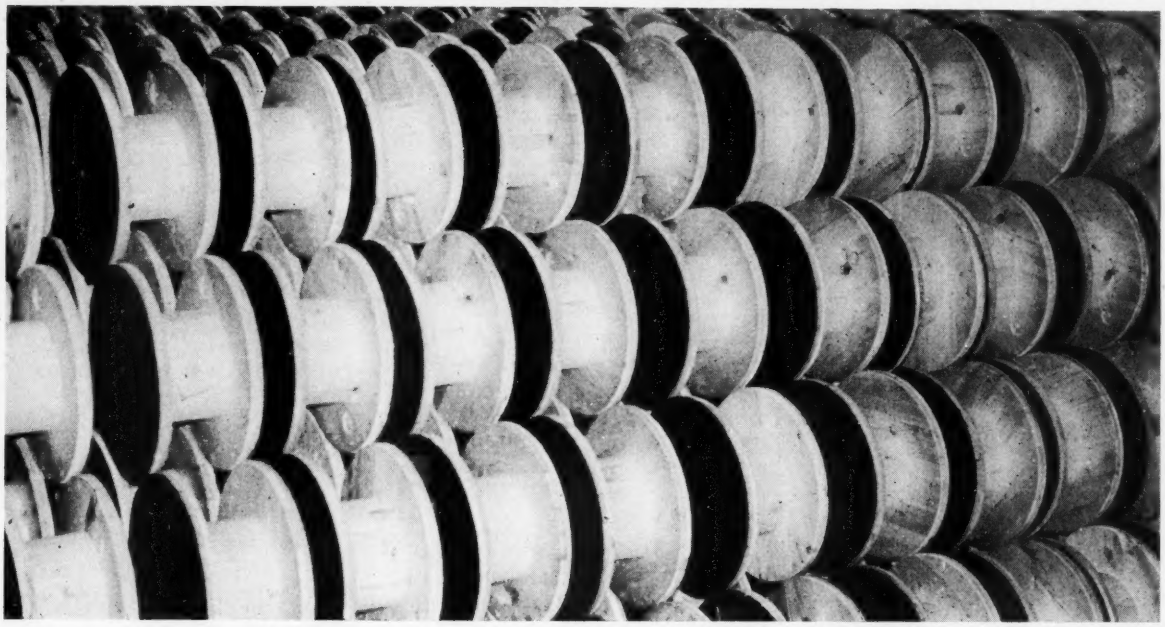

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in 1948 by the Foreign Assistance Act to carry out America's part in that program. Recovery of 16 European nations, the Western zone of Germany, the Free Territory of Trieste and China were the objectives. Political and military events in China since then have resulted in its being dropped from the program.

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HEADQUARTERS under Administrator **Hoffman** are in Washington. A Deputy Administrator for European affairs, **W. Averill Harriman,** has headquarters in Paris.

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FOR most practical purposes all the money for recovery was put up by the United States. As of May 13th this year the participating countries had divided a one billion dollar loan from the Reconstruction Finance Corporation and in addition had been allotted 5.94 billion dollars since the program began in April 1948.

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PROCUREMENT authorizations through April this year totaled 5.1 billion with the United Kingdom (Britain) and France receiving 49 percent of the total.

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BY that time paid shipments under the program totaled 3.1 billion with 55 percent of the goods originating in the United States.

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BREAD grains, petroleum, machines and cotton made up 48 percent of all authorizations and 49 percent of all shipments through April of this year. With demand for food and cotton diminishing abroad, officials are certain that machines and machine products will make up a much larger percent of the shipments during the next year or two.

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ONE of the most popular misconceptions about the Marshall Plan is that it buys the products that are sent to receiving countries. This is most emphatically not the case.

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THE Economic Cooperation Administration is not a procurement agency. The Administrator's duties are, broadly, to review and cut down if possible the requirements of participating countries, to review and accept or reject specific projects submitted to him by the organization of participating European countries to speed the program and to terminate it for any country not living up to its obligations.

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AFTER the administrator has reviewed and accepted a program or a specific project, the Economic Cooperation Administration makes dollar funds available to carry out the program or project. From that time on the whole business is carried on through private channels of free enterprise wherever possible—and that means in practically all operations except purely military projects or scientific developments.

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THE ECA will authorize specific classes of supplies but will not define them exactly and will not tell the participating country where to buy them or from which particular exporter. The commodity code book of ECA, for instance, contains 79 groups into which all food, agricultural and industrial commodities as well as services and transportation costs may be classified.

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GROUP 660 in the ECA code is Iron and Steel Mill Materials, Steel Mill Products and Ferro alloys. Under that group, Number 6705 is Wire and Wire Products.

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GROUP 692 is titled Copper and Copper Products and under it comes Number 6923, Copper Wire, covered or bare.

★ ★ ★

METAL Working Machinery (Except Machine Tools) is another group, given the number 760. Under this group comes Number 7609 entitled Miscellaneous Metal Working Machinery.

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THE ECA authorization would cover on any given project expenditures for any group or might even specify the sub class. But unless it were a military purchase or a scientific one, no specification would be made as to what manufacturer or dealer the product should be purchased from.

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BUT American export business is by no means limited to authorizations passed by ECA. Participating countries have dollar credits of their own. An official statement by ECA says "This makes it doubly important that the United States exporter proceed with normal solicitation of business from importers in the ERP countries without waiting to find out how many ECA dollars have been made available for particular types of goods."

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ANY United States manufacturer, including those who make wire and wire products machinery, who is seriously contemplating invading the foreign market on any scale may get Governmental advice on any commodity from the nearest field office of the Department of Commerce. A list of these field offices appears with this article. Queries may be telephoned, telegraphed or written. This subject will be discussed in greater detail later in the article.

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THERE are many specific requirements for ECA aid in general which may not concern the Wire and Wire Products machine maker directly but a knowledge of which is essential for understanding the problem. Among these are:

(1) Each country must promote its own industries and agriculture with the view of becoming independent as soon as possible.

(2) Must take measures to establish a stabilized currency in which other countries may repose confidence.

(3) Cooperate with other countries to increase mutual interchange of goods by reducing tariff barriers, etc.

(4) Make fullest use of its own and other participating countries' assets.

(5) Help the United States stockpile strategic materials.

(6) Deposit in a special account for building the domestic economy an

amount of its own currency equal to dollar aid extended by ECA.

(7) Publish fully the use of funds.

(8) Furnish any relevant information promptly to the U. S. upon request.

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CHIEF reason for leaving the bulk of the actual transactions to customary channels of private enterprise, of course, was the fundamental belief of American businessmen that Government should govern as little as possible.

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IN addition to this, the U. S. has always regarded the Marshall Plan as a temporary four-year venture. Harriman, speaking recently in Paris put it this way, "The United States wants to make Europe self sustaining as soon as possible and then get out and tend to our own business at home. The sooner we can push this program through and get out, the happier the American people will be."

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ACCORDINGLY, the manufacturer who wants to profit from the present business should understand as much in detail as possible, the relatively simple processes of ECA so that he can prepare to assume the heavy burden which will be laid upon him in becoming an exporter.

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AFTER the Administrator has made a decision on a project, he issues an authorization to the participating country or, if necessary in a minority of cases, to the Government procurement agency involved.

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THESE procurement authorizations are issued in press releases and made public. And they are relayed to the Commercial Intelligence branch of the Commerce Department. Any manufacturer not receiving notice through trade channels may get the latest information from the Commerce Department Branch offices listed with the article.

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THE American exporter seeking business may contact three groups of buyers (1) private importers in foreign countries (2) foreign government purchasing agents and (3) United States government purchasing agents. The first group is becoming ever more important as the program solidifies. Most Government purchasing groups from abroad are disbanding now or will soon at the request of the United States.

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U.S. GOVERNMENT purchasing agencies buy relatively few items such as grains, foodstuffs and medical supplies particularly destined for Western Germany, Trieste, Greece and Austria. However, The Bureau of Federal Supply, purchase branch, Seventh and D streets Southwest, Washington, D. C., does purchase a wide variety of nonfoodstuff supplies ranging from medical supplies to machinery. Other possible contacts for Government purchases are The Department of the Army Office of the Quartermaster General, Second and Q streets Southwest, Washington, D.C., and Department of the Navy, Bureau of Supplies and Accounts, Room 0139 Navy building, 19th street and Constitution avenue, Washington, D. C.

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THOUGH foreign government purchasing missions are disappearing, they were considered sufficiently important for ECA recently to issue a revised list for the convenience of American exporters.

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THOSE which possibly might be a source of sales for Wire machinery manufacturers are;

Merchant Marine Mission, of France, 1330 18th nw, Washington, D. C., purchases ships and spare parts for Liberty ships, cargo ships and tankers.

French Office of Power Stations, 1322 18th st. nw, Washington, D. C., purchases general construction equipment, power plants, electrical material and spare parts.

French National Railways, 1759 R st. nw, Washington, D. C., purchases railway equipment, ties and spare parts.

French Office for Purchase of Well Drilling, 44 Beaver st., New York, purchases well drilling equipment and parts.

French Steel Procurement Agency, 1761 R. st. nw., Washington, D. C., and 44 Beaver st., New York, purchases steel and ferrous metals such as; tinplate, electrical sheets, tubes, coils alloy steels.

Turkish Economic Mission, 1700 Webster st., nw., Washington 11, D. C., purchases for the Turkish state mining and industry program.

British Iron and Steel Corp. Ministry of Supply, 43 Exchange st., New York, purchases copper, lead, zinc, aluminum, iron and steel.

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BUT by far the most important source of business abroad under the Marshall Plan and outside it continues to be private business relationships. The ECA strongly recommends that manufacturers who have present contacts continue them and those who have not develop them.

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THE agency suggests that those who have no present contacts may approach European buyers by mail, by direct visits in person, or by contacting individuals from abroad who visit the United States. It is also suggested that new exporters may gain business by retaining agents who already have contacts abroad or by forming with other small and new exporters in an association. Two experts from ECA have considered this aspect in detail with WIRE AND WIRE PRODUCTS and their advice will be dealt with later.

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IT is not necessary for the American exporter to bother with governmental authorizations, though he will have plenty of headaches in other fields. It is the European importer who must get authorization. It is up to the importer, also, to get permission to pay for his goods with ECA funds. It is the European importer, not the American exporter, who must get the Marshall Plan dollar authorization and arrange means of payment.

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HOWEVER, the novice in exporting will find plenty of other difficulties to worry about. It is he who must arrange for soliciting orders, obtain export and import licenses, arrange monetary exchanges, and the storing of goods.

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HERE again the Office of International Trade of the Department of Commerce will be of great assistance and may be reach-

ed at any of the branch offices listed. It maintains lists of foreign importers and dealers which may be obtained at the field offices for a nominal fee. Your bank, if it has foreign contacts also will have lists of importers.

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PRACTICALLY everything shipped from the United States to Europe must be covered by an export license. It may be obtained from the Office of International Trade, U. S. Department of Commerce, Washington 25, D. C. The fact that a shipment comes under ECA purchases does not lessen the necessity for an export license.

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ONCE the exporter has obtained an order from a European buyer, he must apply for the license to export the goods. But the license is usually granted unless the item is in short supply in this country. In most cases presentation of a certified order is sufficient for obtaining the license. Detailed instructions are contained in a pamphlet called Comprehensive Export Schedule Number 25 obtainable at any Commerce Department office for twenty-five cents. Current Export Bulletins of the department are also mailed free of charge to anyone interested.

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THERE is also the headache of import controls exercised by the foreign countries. Information about these on any given commodity may be obtained from the Areas Division, Office of International Trade, Department of Commerce.

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BUT despite the headaches there are definite indications that good money may be made for smaller newcomers in the export field. **Charles Baker** of the Machinery and Equipment branch of the Industry division of ECA, speaking for George H. Knutson, chief of the division, pointed to the large proportion of industrial equipment which already has been authorized under the plan and predicted that regardless of what Congress does to the total financial backing of ECA, a larger proportion of shipments from now on will be in this class.

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AS of May 31 this year of the total authorized for the European program ($5,574,400,000) industrial commodities represented $2,535,200,000. Non-ferrous metals and products accounted for $345,600,000. Iron and Steel Mill Materials and Products including Ferro-Alloys totaled $147,400,000. Machinery and Vehicles accounted for $679,300,000. The machinery and equipment division under this total consumed $478,100,000, Metal Working machinery, except machine tools, totaled $42,200,000. Electrical machinery and apparatus, $39,900,000.

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"THESE allocations were made despite the terrible need for food and agricultural equipment in these countries during the first period of operation," Baker explained.

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"BUT they did not in any way accurately reflect the real need for machinery and metal products. Now that the urgent need for food has been decreased by increasing crops abroad, a far greater proportion of ECA funds can be allocated to permanent industrial equipment."

★ ★ ★

SUCH a trend is in accord with the underlying principles of the Marshall Plan. Its chief objective being to put European countries on their own feet. It is now that the real work can begin. And it is in this field that **manufacturers of wire and wire products** machines may find a market.

★ ★ ★

ANOTHER aspect which would bode good for independent manufacturers of machinery is the trend toward spreading the business of the Marshall Plan among small businessmen. Like war, the first flush of Marshall Plan need was met as best it could be and the vast volume went to big companies. But the urgency has now been lessened and small businessmen have made their voices heard in Congress.

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AN amendment to the Foreign Assistance Act has been adopted requiring the establishment of a Small Business division within ECA. Mr. White who was quoted in the opening of this article has set up the division and it is possible that some definite fruits of its labors may be available for the benefit of wire machine men even before this article gets into print.

★ ★ ★

"I BELIEVE we have the nucleus of a practical, positive inexpensive program to carry out the intent of the small business amendment," says White.

★ ★ ★

THE division will;

(1) Speed up the dissemination of news about authorizations, lists of possible customers, lists of foreign needs and other essential items to potential suppliers among the smaller manufacturers.

(2) Disseminate detailed information to foreign buyers about the kinds of products that are available among smaller manufacturers in the United States.

★ ★ ★

WHITE makes it clear that his division will use new methods as well as old. In this he is backed by a provision of the law which gives protection from anti-trust prosecution to small manufacturers who band together to pool their resources in an export association.

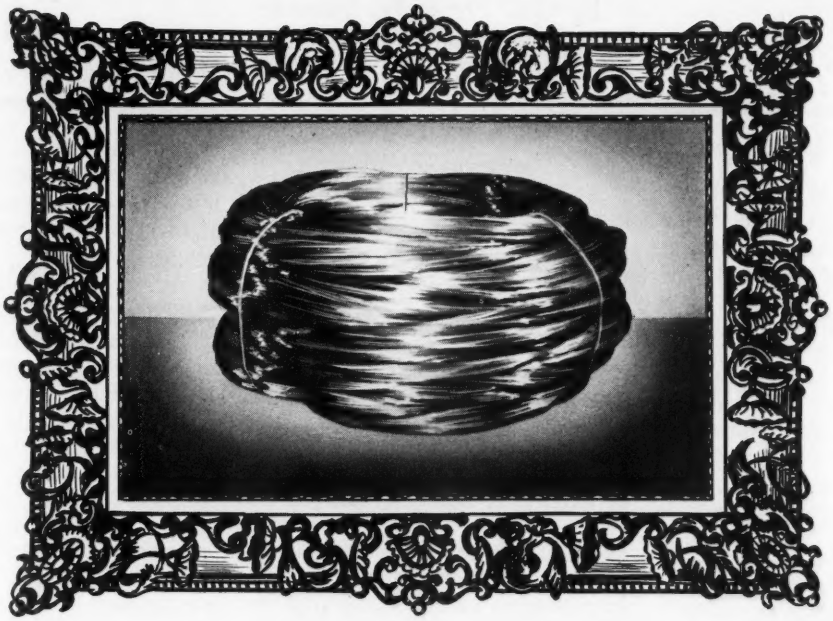
★ ★ ★

"I HAVE in mind such things as assisting a group of nineteen New England manufacturers, all in the metal-working field who complement each other and believe they can collectively handle a prime contract, give some people employment and make some money doing it," White says.

★ ★ ★

"SUCH collective small business efforts to compete may be much more effective since they more nearly approximate the competition offered by big business."

(*Please turn to page* 719)



Now, *there's* a picture!

YES, there's a picture of perfectly drawn high carbon wire which can be yours for the asking.

To a man who knows his wire, this picture is more interesting than the famous Mona Lisa. She has been a mystery for a long, long time, because no one has ever been able to figure out her secretive little smile.

There's nothing mysterious about this picture, though. One look at those smooth, gleaming coils of wire tells you it was drawn with Magnus Metalcoat #267. How else could it be so clean, so free from rust and lime streaks?

How does *your* wire look when it comes from the mill? Do you have a tough cleaning job to do before you can electro-plate it, tin it, galvanize it, weld it, lacquer it, paint it, liquor-finish it, or whatever your finishing operation is? Then you are wasting time, energy and money, and in these days, that's serious!

Ask your wire mill to coat and draw your high or low carbon wire with Magnus Metalcoat #267. Both you, as the fabricator, and the wire mill, as the supplier, will benefit from the Metalcoat #267 process, for no other coating can give the perfect results that #267 does—day in and day out. Nothing else will produce such a fine finish, give such complete rust protection, such clean, dust-free working conditions, save so much time and money. No baking, consequently no fuel costs for bakers. No sull coating, another time-consuming, unnecessary operation eliminated. Very low consumption of lubricants, and a remarkable extension of die life.

These savings in the wire mill make it possible for them to furnish your wire coated and drawn with Metalcoat #267 at no higher cost to you. So, on your next order, SPECIFY MAGNUS METALCOAT #267. Or, if you wish, write and tell us your problems, and we shall be glad to work with your wire mill to help solve them.

Metal Coating Division

MAGNUS CHEMICAL CO.

Garwood **New Jersey**

E.C.A.—The "Law" and the "Profits"

By Col. Frank W. Bullock
Island Creek, Md.

A critical analysis of ECA accomplishments to date, and what may reasonably be expected to develop in the near future.

Introductory Remarks

SAINT PAUL, that eminent jurist and philosopher said, "Now we know in part and we prophesy (speculate) in part." (I Corinthians 13-9) What he might have said, but didn't, was that in the complex field of political economy a simple statement of fact may not necessarily be true. In undertaking the objective examination of **E.C.A.** and of **E.R.P.** of which it is the activating agency, the first and most interesting discovery is how amazingly little is actually known about it and how extremely wide and varied is the field of speculation concerning it.

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HISTORIANS, politicians and political scientists show a remarkable unanimity in seeking to explain the causes and certain of the apparent effects of World War II in terms of ideological conflict. This in itself is no new phenomenon. It has in fact been widely employed in relation to all modern wars. As an analytical approach, this method offers two obvious advantages: first, it permits simplification to a degree not possible to any other approach, and second, since it limits consideration to intangibles, it makes possible the synthesis of more or less logical conclusions which can be readily followed and are generally acceptable to student and public alike even though seldom understood. In short, the ideological approach is popular because it offers a convenient rationalization of a fundamental fallacy. Ideological issues are not and never have been controlling influences leading to armed conflict between sovereign states, nor is the reconcilement of ideological issues an effective influence for the prevention of armed conflict.

★ ★ ★

WHILE the term "war," as descriptive of an event or series of events, is relatively simple and self-explanatory, the same term applied to a state of being is extremely complex. So also are the innumerable tensions affecting the behavior of peoples and governments leading to the employment of armed force, of a bewildering complexity and variety. These tensions or areas of possible tension do, however, fall into certain broad and uniform classifications, for example, geographic, racial, religious, economic or social. In other words, in the very factors which contribute to national cohesion and character are to be found the stresses and strains which lead to war.

COLONEL FRANK W. BULLOCK

Born in Nebraska, studied at Doane College and the University of North Dakota; graduated from Army Industrial College, graduate Harvard Graduate School of Business Administration and served in the army from 1914 till he retired in 1947. He holds the Silver Star, Legion of Merit, Bronze Star, Army Commendation w/2 Oak Leaf Clusters and the Special Presidential Citation.

★ ★ ★

THE purpose of the foregoing remarks is not to indulge in a pointless discussion of the science of geopolitics but rather to sketch, at the risk of over-simplification, a limited background for two important historical facts. First, that coincident with the cessation of actual combat operations, there emerges from every war a new geographic, racial, religious, economic and social pattern, affecting peoples and areas to an extent and degree directly proportional to the extent, severity and duration of the conflict. Second, that from the emergence of this new pattern of "Weltpolitik" until a degree of relative stabilization is reached, the peoples and areas affected are subject to a variety of disruptive influences ranging from emotional confusion to unemployment and actual physical distress often complicated by political hysteria.

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INVARIABLY in times like these, all over the world, men of good will, and, it must be admitted, ambitious persons and those of evil intent, simultaneously undertake to "do something about it." Often these efforts are no more than talk, the mouthing of pious platitudes; others consist in "fishing in muddy waters" for personal gain, and still others consist in more or less abortive attempts to achieve a condition of "normalcy," a sort of mythical status quo—mythical because it has never been achieved nor will ever be, so long as time moves only in one direction. Nevertheless, after every war there has always appeared an organized, tangible effort towards the relief

of distress and the reconstruction of war shattered societies and economic communities. Often enough these efforts are misguided in conception and selfish and wasteful in execution, but in every post war crisis they have been instrumental in bringing some sort of stability to a confused and fear-ridden world. Of these "efforts" the most ambitious and far reaching in all recorded history is the European Recovery Program, miscalled the "Marshall Plan," currently administered by the Economic Cooperation Administration.

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The Questions

INASMUCH as we, the tax-paying, goods-consuming American people are paying for it, our right to ask for detailed and intelligible information concerning what we have bought, to wit, **E.R.P.** and **E.C.A.**, cannot be challenged, nor can answers to our questions, in words of one syllable if need be, be properly refused by responsible officials. It seems significant, however, that thus far any answers, reluctantly advanced, have been vague and bear a distinctly defensive tone. One wonders why. Can it be that our master-minds don't know the answers? Or are we too literal minded (dumb to you) to comprehend high statecraft? Suppose we take a look at the evidence.

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OF the many questions which might be asked, there are three which are of vital importance to business men and to which no comprehensive or even comprehensible answers have as yet been offered. These questions are:

1. Assuming some basis of rational self-interest in the objectives of E.R.P., what benefits may we expect from the accomplishment of those objectives? Or to put it more simply and directly, what *are* the objectives of E.R.P.?
2. In this, the second year of E.R.P. under E.C.A. operation, what have been its accomplishments, and has any progress been made toward the ultimate goal?
3. After E.R.P., what?

★ ★ ★

IN all fairness to the eminent men on both sides of the Atlantic who are charged with the working out of the program, we must concede that concerning a project so vast, so complex and so intimately inter-related with the political and military policies of the participants, there can be no single set of catagorical answers to the above questions. However, from the limited evidence available we may arrive, not at conclusions but at certain presumptions of fact. And since circumstantial evidence, if it admits of only one presumption of fact, may be accepted as conclusive, our presumptions may prove worthy of at least sympathetic consideration.

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Objectives of E.R.P.—Discussion

IN concept, the European Recovery Program is not new, nor is it in any sense original. Many of us are entirely familiar with the politico-economic situation as it existed at the end of the year 1918. And some of us remember all too well the measures undertaken to restore and stabilize that situation—and their tragic failure to achieve either peace or stability. The world situation at the close of the year 1945 differed in none of its essentials from that of 1918. True enough, there were important differences but they were differences only of pattern and of degree. For example, in 1918 Europe was economically in a state of near-destitution. Production was at a standstill, transportation systems disrupted, unemployment universal and in many areas there was actual starvation. And along with these conditions, political hysteria threatened in a half dozen places. The close of 1945 saw these same things, covering more territory, with destruction and distress more widespread and more severe and political hysteria more focalized and violent. A new pattern—with the same old Jig-saw pieces, and, strangely enough, some of the same wilful men manipulating the pieces.

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THE purely tentative suggestions of General Marshall in June 1947 were no more than the expression of sound military thinking applied to the economic aspects of the European situation. Stripped of all verbal embellishment, the General's suggestions amounted to this:

1. Two years after V. E. Day the restoration of European economy to a self-supporting and self-respecting condition is getting exactly nowhere.
2. The potential resources of Europe are sufficient, if wisely applied, to assure the economic recovery of each and every European State.
3. The wise application of material resources to the purposes of recovery can be effected only through cooperative effort, by each and every State.
4. The United States recognizes the presence of widespread physical distress in Europe. It also realizes that certain facilities for the prompt exploitation of resources in the interest of recovery are presently lacking.
5. The United States, therefore, provided Europe will in effect pool the resources, of the several States and undertake to apply same wherever needed for the purposes of recovery, will supply funds and materials for (1) the immediate relief of distress and (2) to make up the immediate deficiencies in industrial and agricultural productive facilities in the respective States.

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THERE was certainly no hint in General Marshall's remarks that their application would split Europe into two hostile camps or that the people of the United States would be asked to sponsor the formation of a United States of Europe. Neither did the General suggest that American taxpayers would be called upon to support foreign military establishments or combat a Communist-inspired revolution in Europe by organizing a counter-revolution of our own design. Yet, deliberately or involuntarily, these extraneous matters are in the European Recovery Program and have transformed our stake in Europe from a reasonable and calculated business risk to a desperately hazardous political gamble.

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FOR an explanation of this mighty transformation, we need merely to recall the actions of Soviet Russia. It will be remembered that at the Paris conference of Foreign Ministers in the summer of 1947, Molotov denounced the suggestions of General Marshall as a political challenge to Russia. Shortly thereafter all countries associated with Russia were directed to boycott the Recovery Plan even in its formative stages,

and a few months later the organization referred to as the Cominform was launched in Warsaw with the declared purpose of wrecking the proposed Recovery Plan. The reaction which transformed **E.R.P.** from a purely economic undertaking into a militant political project, was, to say the least, natural if not inevitable. As for the nineteen participating States of Western Europe, whatever sincere aspirations toward cooperation and recovery they may have had in the beginning, under the spur of Soviet inspired fear, every motivation became subordinate to a unanimous desire for American dollars, American arms and munitions and in the end, American Divisions.

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WHAT then are the real objectives of the European Recovery Program? In a recent interview with the Press, Mr. Paul G. Hoffman, the able organizer of **E.C.A.,** was questioned at considerable length in an effort to obtain from him a common sense summation of just what **E.R.P.** is trying to accomplish. Mr. Hoffman made an astonishing statement to the effect that **E.R.P.** may best be described as a mechanism to enable the free peoples in Europe to maintain their freedom. Certainly such a vague summary was hardly the sort of answer one would expect from an experienced executive. But if we pause for a moment to consider, we must reluctantly admit a certain sympathy for Mr. Hoffman's rather flamboyant reply. As a business man, he knows what every alert business man knows, that, regarded as a simple business proposition, **E.R.P.** simply does not make sense. He has done a remarkable job in creating a businesslike agency to administer it, but to explain the purposes of his project his only recourse is to employ the language of poet and prophet.

★ ★ ★

ON the basis of admittedly limited evidence then, our only logical presumption is that the real objectives of **E.R.P.** are political. What started out as European Recovery, a positive purpose, has been altered to the negative purpose of "Stop Communist Expansion." Within this concept, what advantages if any accrue to the American people? It is difficult to visualize any direct or specific benefits. But it appears that the accomplishment of the mission of **E.R.P.** may offer us three important although relatively negative advantages which may be summarized as follows:

1. A strategic front has been established extending from the Arctic to the Mediterranean effectively halting, for the time being, the advance of militant Communism toward the West.

2. Behind that strategic front, the forces of representative government are, with American aid, strengthening their position, and peoples of Western Europe are gropingly moving toward the knowledge familiar to most Americans — that nations, like individuals, must hang together if they don't wish to hang separately.

3. And most important of all, we are buying time—time for patient diplomacy, education and the forces of public opinion to remove or minimize the threat of war. At the same time we must not overlook the fact that for the moment at least, we gain a defensive base upon which, if necessary, our military potential might be mobilized and a springboard from which, if the worst should happen, our counterattack might be launched.

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ARE we getting fair value for our money?

★ ★ ★

FRANKLY, I don't know, and only time will tell.

★ ★ ★

What Has E.C.A. Accomplished to Date?

COMING now to an appraisal of the current accomplishments of **E.C.A.,** it seems desirable to review briefly a little of its background and touch upon its operating procedure. In the beginning, that is, back in 1947, each of the European governments expected to make separate Marshall Plan "deals" with the United States Government. But our representatives insisted that these nations must plan jointly within the framework of some cooperative European organization.

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ACCORDINGLY it came about that the European governments combined, in a rather restricted area, to form their own counterpart of the American Economic Cooperation Administration. They named their agency the Organization for European Economic Co-operation, abbreviated to **O.E.E.C.** and set up a central office in Paris. The initial task of this organization was to "edit" the applications for American aid from each of the nineteen separate administrations participating in the Marshall Plan and come up with a coherent plan which the Congress of the United States would be willing to consider.

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THIS initial assignment was in itself an enormously complicated and difficult job. For our American experts had in imagination planted under one figurative roof nineteen states and areas possessing a single common characteristic, a unanimous urge to lay hands on American dollars. To illustrate: our plan included Turkey, whose principal claim upon us is that it is threatened by Russia; Greece, prostrate under the lash of civil war; wartime allies like Britain and France; conquered enemy areas like Trieste, occupied Germany and Italy. It demanded financial cooperation from prosperous Switzerland and Belgium, financially shaky Scandinavia and bankrupt France and Italy. It demanded agreement between countries like Britain, trying to live within its means by the practice of rigid "austerity," and France which cannot or will not practice self discipline. Finally it tried to effect a coordination of economic ideas between advocates of free enterprise like the Swiss and British Laborites and Swedish socialists who are committed to policies of "nationalization" and government controls.

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NEEDLESS to say, the plan that finally emerged from **O.E.E.C.** was far from satisfactory. Nevertheless our experts examined the plan in detail, trimmed it down to approximately a size which Congress might be expected to swallow without choking, and the project got under way. Theoretically, the job was to pump American

goods and dollars into the European economy at selected points so that industry and agriculture on the Continent might get into full production quickly, and so that an approximately "normal" flow of trade between all European countries and between Europe and the rest of the world might result. Of course, in the beginning when many Europeans were actually not getting enough to eat, a substantial proportion of **E.R.P.** funds was earmarked for foods and other urgently necessary consumption goods, as for example tobacco and coffee, to keep workers contented and improve their productivity.

* * *

E. C. A., our administrative agency, was set up as a sort of king-size controller. Its primary mission is to make certain that funds go only to those points where their use will accelerate production; to see that nobody gains excessive profits from **E.R.P.** expenditures; and to supervise the flow of goods in accordance with the over-all plan of allocations. As of today **E.C.A.** buys or sells nothing, nor does it engage in the shipment of goods or in any of the direct financial operations relating to the procurement and movement of goods. As far as **E.C.A.** is concerned, all such operational matters are left entirely to private concerns or to appropriate Departments of the Government.

* * *

TO attempt to measure past accomplishments and forecast future ones by reciting a mass of financial and commodity statistics seems futile—even a little ridiculous. The figures are so huge and the commodity movements so diverse that it is doubtful if they would convey very much meaning even if fully understood. For instance, in the January report of **E.C.A.** covering six months operations of **E.R.P.**, there appears this choice bit of information, that "commodity authorizations" amounted to $1,238,000,000 of which 53 per cent came from the United States, 21 per cent from Canada and Newfoundland, 7 per cent from Latin America and the balance from "participating countries, and that $2,500,000,000 was released to nineteen "countries and areas" during this period. All of which means exactly nothing except possibly that if any relationship should exist between the figures quoted, it might indicate that the whole "tamasha" is coming out of the pocket of "John Q. American."

* * *

IF, however, we narrow down the field of our evaluation to a non-detailed comparison of "mission" and time, some sort of appraisal seems practicable. Reduced to its most elementary terms the Marshall Plan had two direct aims. One, to supply immediate aid to the nations of Western Europe whose further demoralization or collapse might offer a dangerous opportunity for Communist expansion. The other, or long range mission, was to promote, over an estimated period of four years, a co-operative procedure which would enable them to recover their stability and free themselves of the so-called dollar shortage.

* * *

AFTER something over a year of **E.C.A.** administration it looks from here as if the first objective may have been reached. At least for the time being, Communist expansion in Europe is definitely halted, which opinion is largely confirmed by recent elections in Italy, France and Germany. Moreover, all recent reports, including some first hand observations of American business men, indicate that mechanically, at least, the economic phases of the program have shaken down to a workable basis.

* * *

WITH respect to the second, or long range objective, the situation becomes more than a little confusing. Before Congress appropriates more millions of our people's money, some members are going to insist on some affirmative evidence that Western Europe is really cooperating or is prepared to do so. And for that evidence the prospects are far from rosy. One of the conditions for participating in the benefits of the Marshall Plan was that each beneficiary should prepare a four-year plan which should fit into a master plan designed to wipe out the dollar shortage by 1952. The deadline for the presentation of these plans is long since past. The trouble seems to be that each government wants to use American capital to build up a profitable export trade, but doesn't want to import anything except those things which can be bought only with dollars. In short, they all seem to choke on the idea of any intra-regional reciprocity. One is reminded of Lord Bothwell's dissertation on the people of Scotland: "Their idea of business is to buy cheap and sell dear, but since no Scotsman will buy dear or sell cheap, there is no business." The experts seem to have gone overboard on ambitious export plans and starry eyed estimates of how much they can do without at home. Consequently any prospect of reaching an over-all balance of trade and of relieving the chronic dollar shortage by the end of 1952 is exceedingly dim.

* * *

ALREADY a pattern of bi-lateral exclusive trade arrangements, allegedly financed with **E.R.P.** dollars, is taking shape among Marshall Plan beneficiaries, not only tending to defeat any honest efforts toward European stabilization but militating to the direct detriment of American free enterprise upon which these people depend for their continued existence. Yet a further piece of evidence may be found in the current reports of plans for the devaluation of the Pound Sterling. On our own side of the Atlantic, combined with increasingly vigorous opposition to the further expenditure of American taxpayers' money to finance adventures in State Socialism in countries receiving **E.R.P.** aid, comes an ominous growl of protest from American industries against the unadmitted policy of financing their competitors with their own tax money.

* * *

PUTTING it brutally therefore, the long range part of the Recovery Program seems headed for

(Please turn to page 716)

JAMES L. ENTWISTLE CO.

Wire Machinery

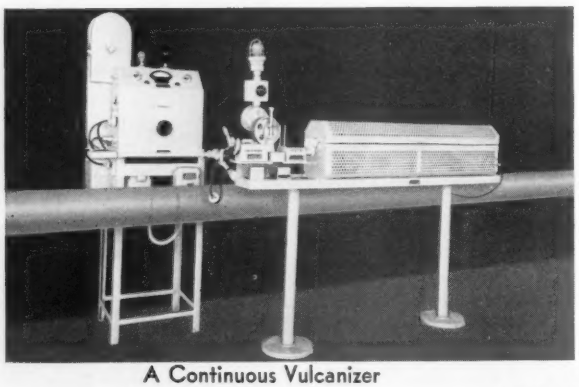
The JLE equipment illustrated on this and the following pages represent the most modern equipment of their type available anywhere in the world today. To those wire manufacturers in ECA countries who must have high-production, low-labor cost machinery, in order to compete in world-wide markets, JLE offers their complete services as well as the outstanding JLE equipment shown.

Rebuild... Expand... Modernize with JLE Wire Machinery

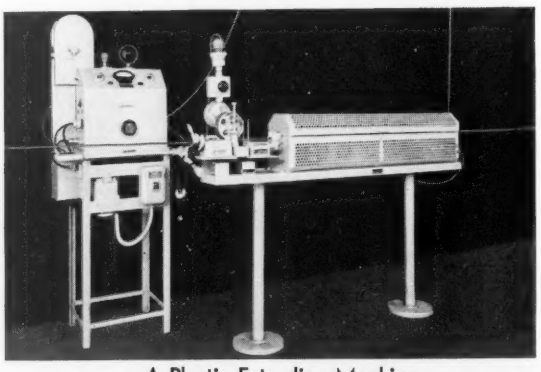
Send for the specific catalog section covering your equipment requirements.

JLE SPARK TESTING MEASURING and RECORDING Equipment

for use on



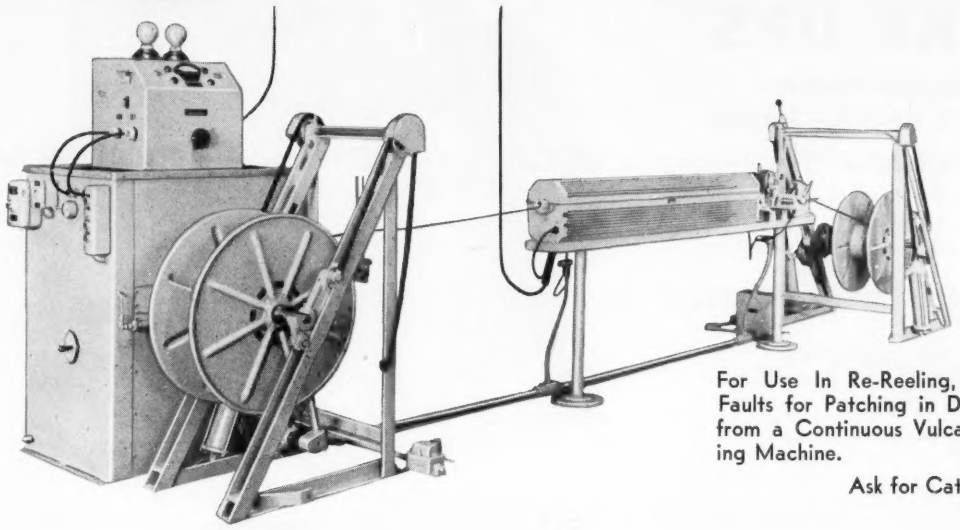
A Continuous Vulcanizer



A Plastic Extruding Machine

Ask for Cat. Sec. 2-A

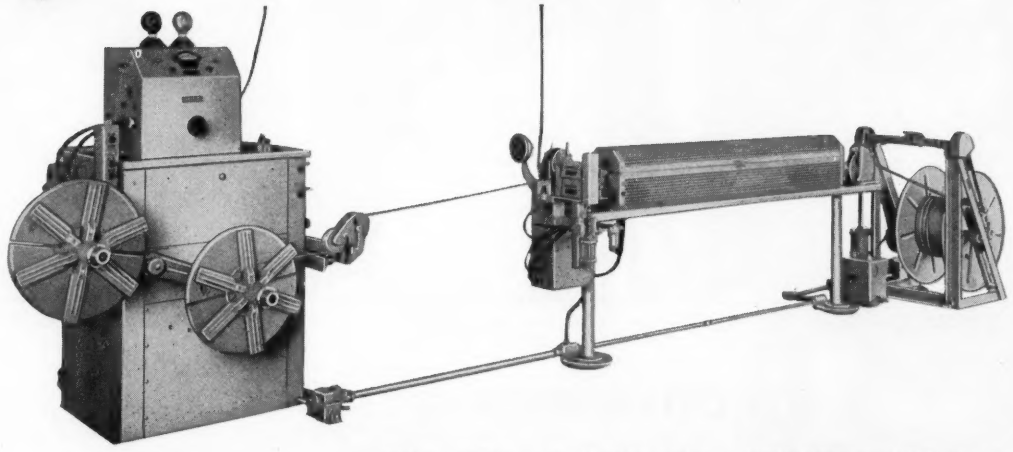
AUTOMATIC REELING, MEASURING AND SPARK-TESTING EQUIPMENT



For Use In Re-Reeling, Testing and Locating Faults for Patching in Defective Reels of Wire from a Continuous Vulcanizer or Plastic Extruding Machine.

Ask for Cat. Sec. 2-B.

AUTOMATIC COILING, EQUIPMENT AND SPARK-TESTING EQUIPMENT



FOR USE IN COILING FINISHED WIRE

Ask for Cat. Sec. 2-C.

REEL TAKE-UPS

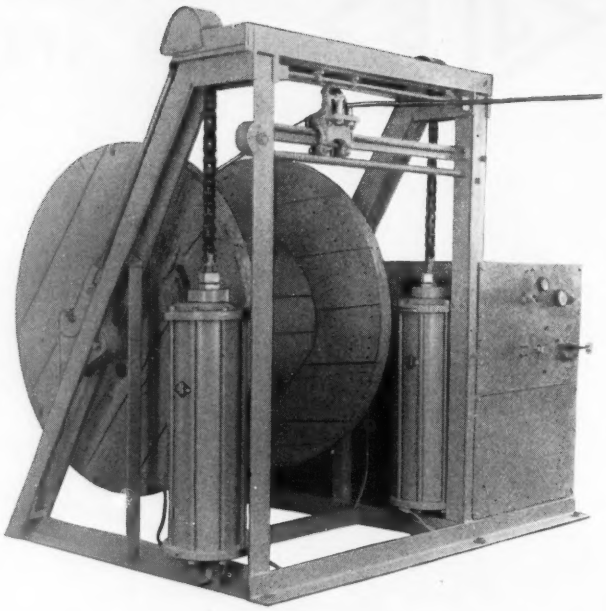
Meet Reeling Requirements From Standard Unit Arrangements!

Outstanding JLE Reel Take-Up Features:

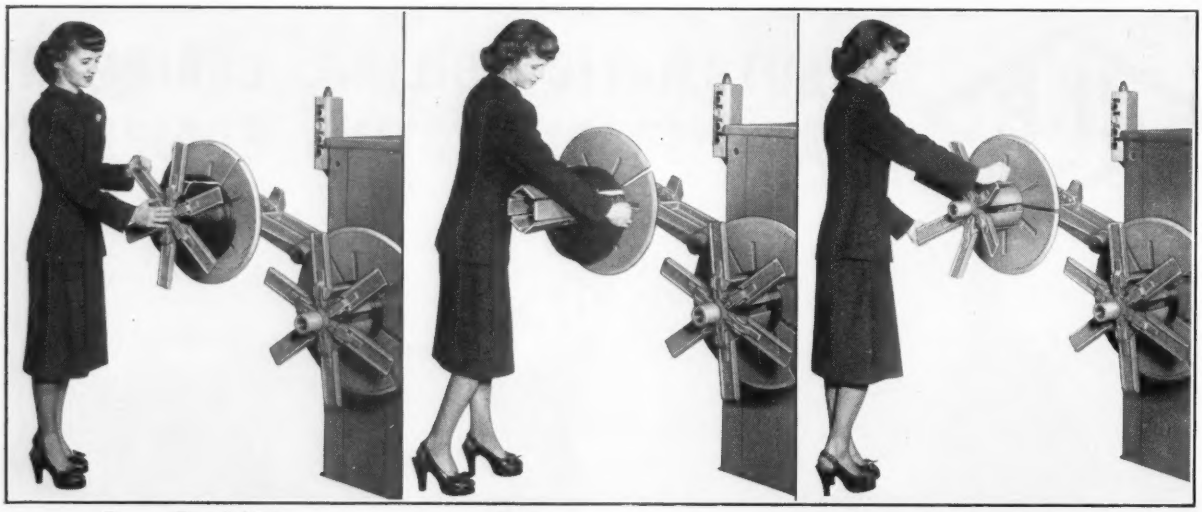
1. Complete design flexibility. Standard units easily adapted to your drive requirements!
2. Pneumatic reel lift. No back-breaking reel-handling effort!
3. 18" to 84" diameter reels. Available in 5 frame sizes.
4. Rugged frame. Welded unit construction.
5. Traverse mechanism is quickly and steplessly adjustable for wire size and reel width.
6. Slip-clutch (optional) for trouble-free manual or automatic torque control.

Ask for Cat. Sec. 3-A.

JLE Take-Ups are available in a variety of sizes and drives.



Reel Take-up now in operation at Bundy Tubing, Detroit, Michigan, U. S. A.



Easy collapsibility! Coil removes easily! Reel resets easily!

COLLAPSIBLE COILING REELS

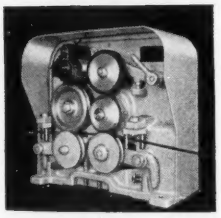
Available in light weight construction for high speed operation or in heavy construction for slower operation on heavy coils of bare wire or wire rope.

More than 24 types of JLE Collapsible Coiling Reels are available to meet all conditions. Ask for Cat. Sec. 7.

WIRE MARKING MACHINES

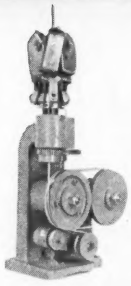
Designed to print identifying marks such as size and type of wire and manufacturer's name. Also suitable for applying trademark or other special characters, when desired.

★ ★ ★ ★ ★ ★



Class A For printing or striping in any one color on one side of wire from 1/16" to 3/4" in diameter at speeds up to 1000 ft. per minute.

Class A-2 For printing or striping in any one color on one side of wire from 1/2" to 2" in diameter.



SPIRAL MARKING MACHINE

For color coding plastic insulated wire. Spiral stripes as many as 3 different colors simultaneously.

TYPE F WIRE MARKING MACHINE

For printing or striping longitudinally on plastic wire at the extruding machine.

Ask for Cat. Sec. 18-A.

PAY-OFF REEL STANDS

CLASS N

Quicker to operate.
Easier to operate.
Costs less to operate because reels are raised and lowered pneumatically.

JLE Pay-Off Features Include:

1. A range of 5 sizes to accommodate 18" to 84" reels.
2. A range of lifts from 600 lbs. to 10 tons.
3. The following types of torque controls.
   Adjustable, constant-torque-drag independent of braking.
   Adjustable, constant-wire-tension.
   Pneumatic braking.
   Foot-operated switch to release brake.
4. Provision is made to prevent reel from dropping in case of air supply failure, also to regulate speed of raising and lowering.
5. Both reel and raising mechanisms as well as sprocket shafts are equipped with roller bearings.

Ask for Cat. Sec. 13-A.

OTHER JLE PRODUCTS

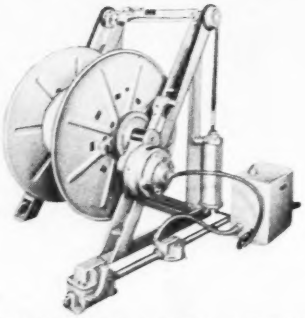
Serving the World-Wide Wire Industry

INCLUDE:

PNEUMATIC CYLINDERS

A variety of sizes, types and mountings for all applications are available.

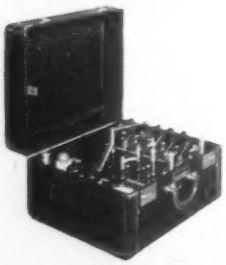
Ask for Cat. Sec. 20-A.



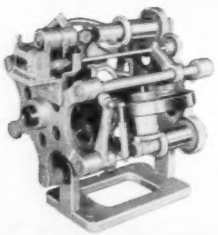
PNEUMATIC DISC BRAKES and PRESSURE CONTROL UNITS

Shown in a Practical Application with Foot Operated Push Button Station with Automatic Pay-Off Reel Stand.

Ask for Cat. Sec. 17-A.



WIRE SPARKER CALIBRATING UNITS



WIRE MEASURING MACHINES

Many types and sizes for all requirements.
Ask for Cat. Sec. 11.

THE equipment illustrated on these pages represent only a few of the many JLE products and particularly emphasizes coiling and reeling equipment for the insulated wire industry. Coiling and reeling equipment for the bare wire and rope industry is also available. For full information on the entire line of JLE equipment send for the complete JLE catalog.

JAMES L. ENTWISTLE CO.

43 CHURCH STREET, PAWTUCKET, RHODE ISLAND

30 YEARS OF SERVICE TO THE WIRE INDUSTRY

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Factors to Keep in Mind in Selling Under the ERP

FIRST, it should be mentioned that **ERP** stands for "European Recovery Program," originally and often called the "Marshall Plan." **ECA,** on the other hand, are the initials of the bureau set up to administer the **ERP** and they stand for "Economic Cooperation Administration."

★ ★ ★

MANY manufacturers, especially the smaller ones, have had difficulty in finding out who is buying what, in spite of the fact that millions of dollars of goods and equipment are being sent each week to participating countries.

★ ★ ★

THE method of securing this business is not simple, as it was under military procurement or Lend-Lease purchases, where all the buying was done by the U. S. Government. Hence a few comments on what to do and what not to do may be in order:

★ ★ ★

THERE are no central purchasing agencies, but producers **can** make sales if they will take the time to do so.

★ ★ ★

EACH day the **ECA** issues a list of "procurement authorizations." This gives the amount of new **ECA** financing approved for each country and the types of goods each will purchase. Such lists may be secured free of charge from the Office of Information, Economic Cooperation Administration, 800 Connecticut Avenue, Washington 25, D. C. The **ECA does not** tell who will buy these goods. A seller must find out who does the buying for his product in the foreign country and arrange the details of the sale with the buyer, who will make local arrangements for the use of **ECA** funds.

★ ★ ★

SOME European countries have buying missions in the U. S., but not all. These missions buy only a few items and usually operate on orders for goods issued to them from buyers in their home countries. The **ECA** can supply the names and addresses of such buying missions. The **ECA** buys nothing itself. Don't try to sell them.

★ ★ ★

MOST sales originate with an individual concern in Europe who wants to buy something. It helps to have a European representative abroad to take such orders, but this is not necessary.

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PRIVATE export agents who "know the ropes" are often helpful in getting **ECA** financed orders and some American manufacturers have made such arrangements.

★ ★ ★

BIDS on purchases are a matter of what a foreign purchaser wants, but are not required by law, as in the case of military purchases for the U. S. services.

★ ★ ★

PRICES are controlled only to the extent that **ECA** funds cannot be applied to products offered at a price higher than the regular selling price in the U. S. Refunds can be demanded, if prices are later found to have been loaded.

★ ★ ★

ON payments, before a purchase is made, a country is given an authorization by the **ECA** and the country either makes the purchase or authorizes some individual, firm or agency to do it. Then an **ECA** credit is established with some bank through which the seller can be paid in American dollars.

★ ★ ★

EXPORT licenses must be secured if the item sold is subject to export control. These may be procured through the Office of International Trade, Department of Commerce, Washington 25, D. C. Where an export agent is used to make the sale, license arrangements are usually made by him.

★ ★ ★

THE whole procedure is complicated, but boils down to locating the buyer. Advertising in appropriate publications reaching buyers for one's products in foreign countries is one way of selling the buyer. On him, if he wants your products, will then devolve much of the "red tape." Such business can be procured here and many are getting it now.

★ ★ ★

How to Handle ECA Shipments

THERE is little difference between handling of routine export shipments and those shipments being financed by **ECA** funds. Many thousands of these latter shipments have already been made, and American suppliers now have on hand additional thousands. To many exporters, the handling of **ECA** shipments has proven quite confusing. In an effort to clarify the handling procedure for **ECA** shipments, we are listing here the responsibilities which an American supplier assumes when he accepts an **ECA** order.

FOREIGN firms have often referred to the fact that a tentative order is to be financed "under the Marshall Plan" or "within the European Recovery Program", or some other such general statement. The provisions of **ECA** Reg-

ulation No. 1, as revised, October 15, 1948, require that the importer abroad promptly make known to his supplier the procurement authorization number assigned by the ECA and under which the particular importation is to be effected.

★ ★ ★

UNTIL the supplier receives the procurement authorization number, he is not responsible for compliance with the provisions of ECA Regulation No. 1. This has recently been very strongly illustrated by the action of the Belgian Government in requiring "ECA documentation" on all shipments from the western hemisphere valued at more than five hundred dollars. To comply with these regulations, American exporters of items not likely to be financed with ECA funds had to comply with the Belgian requirements and submit copies of their invoices to the Belgian Economic Mission, but they did not have to label their goods nor supply copies of documents to the ECA, unless a procurement authorization number was furnished them by their customer.

★ ★ ★

EXPORTERS should learn to identify the procurement authorization number so that they will be able to know when they have an actual ECA financed transaction in hand. Copies of the ECA Regulation and advice with respect to its meaning may be secured from any field office of the Department of Commerce.

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THE requirements imposed by ECA Regulation No. 1 on suppliers of goods are:

1. The procurement authorization number applying to the particular transaction must be shown on all documents.
2. One copy of all contracts, purchase orders, or other documents constituting the purchase agreement and any amendments thereto, including amendments to establish final prices (each of which must be identified by the appropriate procurement authorization number), must be sent to the Controller, ECA, Washington 25, D. C., as soon as they are issued. For information as to the type of data to be included in purchase agreements, you may refer to paragraph 1111.6 (g) of the Regulation.
3. An order must not be accepted for delivery in any quarter except that shown in the procurement authorization. The last three digits of the procurement authorization number identify the quarter. For example, 491 refers to first quarter 1949. However, if a supplier has accepted in good faith an order for delivery in a designated quarter, he may, in agreement with the importer, make delivery not more than sixty days in advance nor more than ninety days after the end of that quarter, except where delivery is otherwise restricted by the procurement authorization.
4. Goods and shipping containers must be labeled or stenciled with the official ECA emblem. See paragraph 1111.13 of ECA Regulation No. 1 for further instructions.
5. A Supplier's Certificate in the proper form, attesting that the supplier is a regular dealer, the amount claimed is properly owed, the prices charged are no higher than those usually charged, etc., must be completed. This Supplier's Certificate is often furnished in blank by the importers. However, printed copies can be purchased at commercial stationers. The text is a part of ECA Regulation No. 1, revised.
6. A certification that copies of contracts, etc. have been furnished to the ECA must be given to the paying bank of the buyer, depending on instructions received.
7. One copy of the bill of lading must be sent to the ECA Mission in the country of destination.

★ ★ ★

THERE may be instances where additional documentation is required by the terms of the procurement authorization. In such instances, the letter of credit will specify the additional documentation, or the importer abroad will convey the information to his supplier.

★ ★ ★

THE above requirements are in addition to the usual documentation necessary on export shipments. This documentation varies from country to country. Information as to the documentation requirements of individual countries may be secured from any field office of the Department.

★ ★ ★

ECA Policy on Payment of Commissions to Foreign Representatives under ECA Programs

THE following information has been furnished by the ECA Washington Office in explanation of the new ECA policy concerning the payment of sales commissions by United States suppliers to their foreign representatives or agents for business secured under ECA financing programs:

★ ★ ★

"A METHOD for handling foreign agents' commissions has been a subject of much discussion within ECA during the past several months. ECA recognizes the several standard practices within industry but is also aware of its basic responsibility for directing the use of dollars supplied by it in such a manner as to achieve the greatest possible benefit for the participating countries.

★ ★ ★

"ECA BELIEVES that foreign representatives of American business who live and do business in the Countries under the Marshall Plan can use, as their payment for services, the currency of their country of residence. It also believes that ECA supplied dollars should be used exclusively for the purchase of goods and services available in and supplied from the dollar areas. ECA does not wish to disturb normal contractual relations between suppliers and their agents by requiring that all commissions under ECA programs be paid by the buyer. On the other hand, it believes that ECA dollars must come under the direct control of the governments of participating nations to avoid hoarding and to insure their flow through programmed undertakings.

★ ★ ★

"THE new policy, which will be implemented by regulation, permits the inclusion in the regu-

lar foreign selling price of standard commissions to foreign agents but requires that such payments be made in the currency of the country involved.

★ ★ ★

"BASED on reports which **ECA** will require from U. S. suppliers covering commissions paid to their foreign representatives for business secured under **ECA** programs, monthly billings will be rendered to each participating government to recover the dollars paid as commissions. The dollars thus recovered will be returned to **ECA** funds for reprogramming and allotment."

★ ★ ★

Big ECA Loss In Cargo Laid to Poor Packing

ABOUT 10 per cent of materials shipped abroad under the European Recovery Program are lost through improper packaging, handling or stowing, delegates to the packaging conference of the American Management Association were told recently.

★ ★ ★

JEROME T. GOULD, president of Acorn Packaging & Packing Corp., New York, said that export losses due to improper packing in 1947 and 1948 ranged from $750,000,000 to $1,000,000,000 a year. He urged immediate action by steamship conferences or underwriters to set minimum standards for all cargo leaving the United States.

★ ★ ★

Comments on the First Year of ERP in Europe

MAURICE PETSCHE, French Minister of Finance—"Half of France's imports during the last year, a thousand million dollars worth of food, raw materials and equipment, has come from the Marshall Plan. 110,000 million francs that has come from the sale of these goods in France has aided our Treasury to finance reequipment and reconstruction."

★ ★ ★

PAUL HENRI SPAAK, Prime Minister of Belgium—"I affirm my faith in the peaceful future of a world in which Europe, healed of its wounds and fortified by its trials, intimately brought together in its diverse and complementary elements, can contribute effectively to the development of the well-being of men, to the realization of social justice and to the safeguarding of peace."

★ ★ ★

PRIME MINISTER ATTLEE of Britain — "Nineteen nations united in the **OEEC** have undertaken a common effort that is without precedent in any time of peace. The result has been the transformation in a single year of the entire economic situation of Western Europe."

★ ★ ★

PAUL G. HOFFMAN, ECA Administrator—"The participating countries can count the following gains: increased industrial production, expanded exports, narrowing of their balance-of-payments gap, and lessened inflationary trends. In this first year of **ECA's** operation, a momentum has been attained that must not be lost. . . We have been encouraged by the progress made in production and in monetary stability, trade, etc."

★ ★ ★

AMBASSADOR W. AVERELL HARRIMAN, U. S. Special Representative in Europe—"Only through working together can the European countries rebuild their economic lives to become self-sustaining and hold out hope for a better life for the future. I feel that the confidence which the American people showed in Europe has been fully justified during this first year of the Marshall Plan."

★ ★ ★

ROBERT MARJOLIN, Secretary-General of OEEC—"Never before have the countries of Europe laid their national problems and plans before each other open to examination and discussion. Each country has its national interests to bear in mind, but in every case it was the good of Europe as a whole which influenced the final decision."

★ ★ ★

"IN all the work there is one main object which is kept in view and which decides the policies of our organization. It is that Marshall aid will end in 1952, and by that time Europe must be able to stand on her own feet. . ."

★ ★ ★

ECA Finds Europe's Output at '38 Level; Foresees a 30% Decline in Dollar Deficit

A REDUCTION of 30 per cent in Western Europe's total gold and dollar deficit in the year ending June 30, compared with the preceding year, was forecast in a report to Congress by the Economic Cooperation Administration covering the final quarter of last year.

★ ★ ★

THE prospective deficit of Marshall Plan countries is $5,500,000,000 for the year 1949, com-

(*Please turn to page* 710)

Westinghouse Copper Wire Mill At Buffalo, New York

Part I

Operations and methods in copper wire production and insulated wire and cable manufacture are described in detail . . .

Introduction

THE Copper, Motor, and Industrial Control Divisions comprise Westinghouse manufacturing activities at its new Buffalo plant. The Copper Division occupies approximately 200,000 square feet of floor area and employs approximately 200 people; 15 percent of the total floor area, 4 percent of the total number of employes.

★ ★ ★

ROUND and rectangular copper wire is produced here for use by all the manufacturing divisions within the company. The round wire is used in motors, control elements, etc., while the rectangular wire finds its way into transformers, large motors and generators.

★ ★ ★

THE Buffalo area is ideally suited for this operation. It is near the raw material supply and centrally located with respect to other Company plants that use copper wire.

★ ★ ★

Raw Material

THE raw material for wire drawing is hot rolled copper rod that has been pickled to remove the oxide scale. This rod is received in coil form, each weighing approximately 250 pounds. Rod sizes used range from 3/8" to 9/16" diameter.

★ ★ ★

COPPER rod is received in box cars and unloaded at a dock in the receiving and storage area (See A on Flow Chart). Coils of rod, loaded on edge to facilitate handling, are unloaded by a 5,000-pound-capacity ram type lift truck. As shown in PR-4788, the truck can be driven inside the box car where 10 to 12 coils are picked up at one time. These coils are stacked in rows on the dock until they have been counted to verify billing and receiving papers.

★ ★ ★

THE coils are removed from the receiving dock to the storage area where they are stacked two and three high (See B on Flow Chart). Each box car load of rod is stacked in one location with a placard showing receiving date, car number, number of coils and net weight.

★ ★ ★

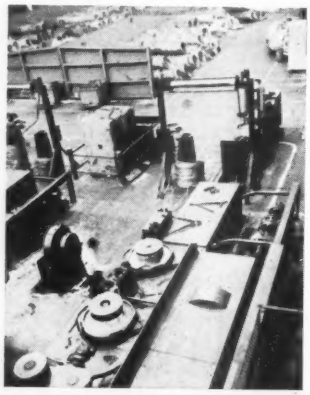
Shaving

THE first step in the manufacture of drawn wire is the shaving operation. 0.008" is shaved off the diameter of the raw stock. Coils of copper rod are delivered from the storage bins to the shaving machines (See C on Flow Chart) by the electric ram-type truck. In PR-4825 five coils of rod are being placed on one of the two cone-payoff stands located behind each shaving machine. Each cone-payoff stand can be operated independently. It can be tilted to a horizontal position to load and returned to a vertical position to feed the machine.

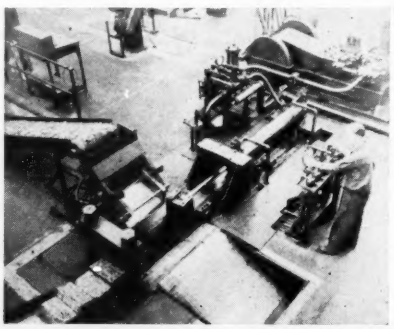
★ ★ ★

THE shaving machine operator pulls the end of a coil loose from the cone and cuts the end in a hand-operated shear so that a "V"-shaped end is made. The end of the coil adjacent on the cone is then pulled loose and cut in the same manner. The two cut ends are clamped in the jaws of an electric butt welding machine and flash welded. The excess material at the weld is filed off so that the

PR-4788—A conventional ram-type electric lift truck is driven inside a standard railway box car where ten to 12 coils of copper rod are picked up at one time. * * * *



PR-4825—Five coils of copper rod are being placed on one of the two-cone payoff stands located behind each shaving machine. Each cone payoff stand can be operated independently. It can be tilted to a horizontal position for loading, and returned to a vertical position to feed the shaving machine. * * *



PR-4205—Copper chips from the shaving operation are carried by conveyor to this hydraulic baler which bales and ejects them. * *

rod will freely enter the drawing die in the shaving machine. Each consecutive coil on the payoff stand is welded to the adjacent coil. This results in a continuous, unbroken length of rod for shaving and drawing. The speed of the copper stock through the shaving die is 250 fpm.

★ ★ ★

ROD which has been shaved and drawn is put up on a 42-inch steel spool, holding approximately 4,000 pounds of wire. When 16 coils of rod have been processed, the machine is stopped to remove the full spool and replace it with an empty one.

★ ★ ★

EACH block of each shaving machine is driven by a 60-horsepower d-c motor. The 42-inch take-up spool is driven by a 22-½ horsepower d-c motor. Speeds between successive draw blocks and the take-up spooler are controlled by Rototrol rotating control units. A magnetic brake is used to stop the take-up spool at the same time the machine is stopped.

★ ★ ★

SHAVED wire can be made in steps of one-half Brown & Sharpe numbers from 0.520″ to 0.193″ diameter. A supply of each size of wire is maintained in a Work in Process storeroom for use on the cold rolling mills in the production of rectangular shapes of copper wire.

★ ★ ★

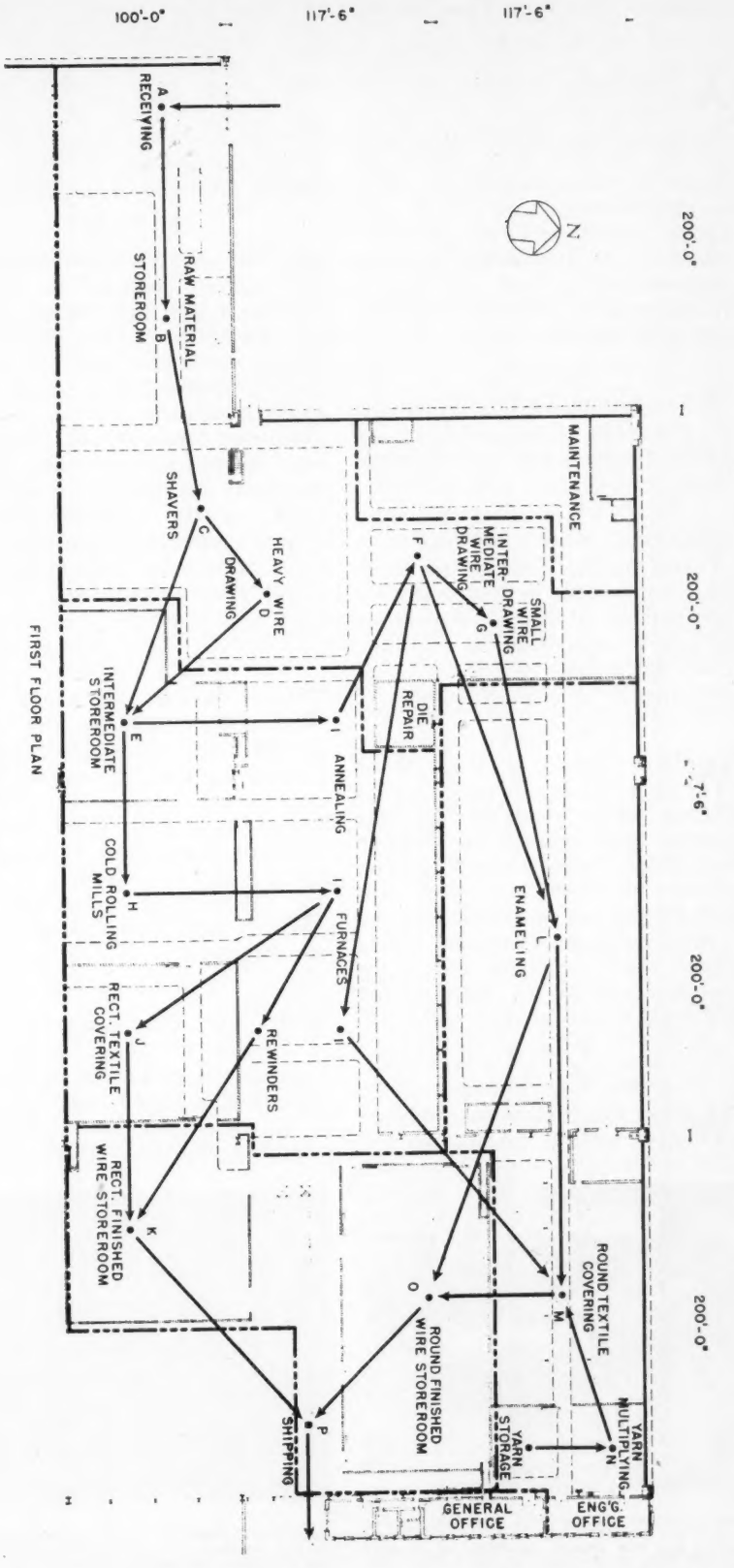
Reclamation of Copper from Shaving Operation

THE problem of scrap disposal has been solved by a belt-type conveyor which passes under each of the shaving machines. Copper chips are carried by this conveyor, as shown in PR-4805, to a hydraulic baler which bales and ejects them.

★ ★ ★

Heavy Wire Drawing

SPOOLS of shaved wire from which smaller sizes of round wire are to be drawn are moved from the shaving machines di-



FIRST FLOOR PLAN

FLOW CHART OF COPPER WIRE MILL
WESTINGHOUSE — — — BUFFALO PLANT

rectly to the heavy wire drawing machines (See D on Flow Chart).

★ ★ ★

A VAUGHN five-die machine, with a 150-hp d-c motor driving four blocks, a 40-hp d-c motor driving the final block, and a 22-½-hp d-c motor driving the take-up reel, finishes round wire in half-gauge steps from 0.182″ to 0.136″ diameter. This same machine will also draw square wire in all Brown & Sharpe gauge sizes from 0.064″ to 0.289″ square.

★ ★ ★

TWO Syncro 13-die, 100-hp d-c machines finish 0.129″ to 0.051″ diameter wire in half-gauge steps.

★ ★ ★

THE size of wire supplied from the shaving machines for making smaller sizes is determined by the number of dies it is possible to use in each drawing machine. Each die reduces the diameter of the wire by one gauge number.

★ ★ ★

WIRE finished by these three machines is put up either on 30-inch spools holding approximately 1,000 pounds of wire, or on 22-inch spools holding 500 pounds of wire. The spools are rolled from the machines into the Work in Process storeroom (E on Flow Chart), where they are weighed and stored until needed for further processing.

★ ★ ★

Fine Wire Drawing

WIRE which is to be drawn to finer sizes is taken from the storeroom, annealed and taken to the fine wire drawing machines. Nine intermediate wire drawing machines are located in one bank (See F on Flow Chart), shown below in PR-4804. Eleven fine wire drawing machines are also arranged in one bank (See G on Flow Chart), also shown in PR-4804.

★ ★ ★

WIRE in sizes from 0.045″ to 0.0179″ diameter is finished on one of the intermediate drawing machines (12-die, 60-hp d-c Syncro machines) and put up on 16-inch spools. These spools hold approximately 250 pounds of wire. The wire from these machines may be sent either to one of the insulating sections, or used as stock for the 16-die, 25-hp d-c Syncro machines. These latter finish wire in sizes from 0.0254″ to 0.0025″ diameter.

★ ★ ★

Lubrication

THE shaving and heavy wire drawing machines, the intermediate wire drawing machines, and the fine wire drawing machines each have a separate recirculating lubricating system. Wire drawing machines in operation have a cover which completely encloses the dies and capstans, in order that the lubricant may completely flood the compartment.

★ ★ ★

THE lubricant used is a water solution of fat and soap, with a normal fat content of seven percent for the heavy machines, five to six percent for the intermediate machines, and two to three percent for the fine wire machines. The lubricant solution not only performs its function of lubricating the wire to reduce die wear, but also carries away the heat created by pulling the wire through a die. The lubricant itself is heated to a temperature higher than that at which the best results are obtained; it must be cooled before being returned to the machine. An air heat exchanger is used to remove the excess heat from the lubricant before it is recirculated through the wire drawing machines. PR-2180 is a close view of the intermediate wire drawing machines showing the electrical conduit trench and the under-floor return trench for the drawing lubricant.

★ ★ ★

Cold Rolling Rectangular Wire

ROUND wire that has been shaved and/or drawn and stored in the work-in-progress storeroom is withdrawn as needed to be cold-rolled into rectangular wire (from 0.016″ to 0.250″ thick, and 0.072″ to 0.625″ wide).

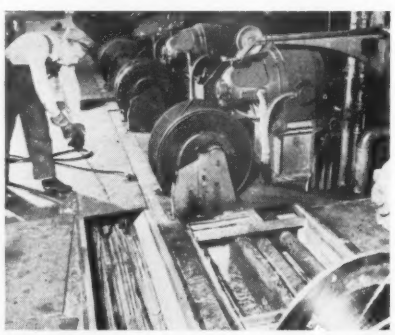
★ ★ ★

TWO 3-stand and two 2-stand Torrington tandem mills are used for the production of rectangular wire. PR-4785 is a general view of the two 3-stand mills (See H on Flow Chart). Each stand of these machines is powered by a 60-hp d-c motor, while 22-½-hp d-c motors operate the pay-off and take-up reels.

★ ★ ★

ONE of the 3-stand and one of the 2-stand mills are equipped with eight-inch diameter rolls in

PR-4804—Nine intermediate wire drawing machines are located in one bank at the left, and eleven fine wire drawing machines are arranged in one bank at the right of this general view of a part of the copper mill. * * *



PR-2180—This view of the intermediate drawing machines, shows the electrical conduit trench and the under-floor return trench for the drawing lubricant. * * * * *

PR-4785—A general view of the two 3-strand Torrington tandem mills. * * * *

the first stand and six-inch rolls in the following stands. These mills run the smaller sizes of wire. The other two mills have ten-inch diameter rolls in the first stand, with eight-inch rolls in the following stands for fabrication of the large or very wide sizes of rectangular wire. In all cases the rolls are made of hardened steel and ground to a smooth finish.

★ ★ ★

IN the 3-stand mills, wire from the supply spool is entered into a set of five straightening rolls to remove any sharp bends. From there it is entered directly into the first pair of upright rolls, where it is reduced from a round to an oblong shape with parallel flat faces. The wire is next guided into a set of edging rolls which form the flat sides of the rectangular shape and also give the corners a definite radius. Another set of upright rolls further decreases the thickness to within a few thousandths of the desired finished size. The desired width and corner radius is achieved in the next set of edging rolls, and the final few thousandths of an inch of thickness is removed by the third set of upright rolls. This third stand of rolls gives the wire its finished size, produces smooth wire by a relatively small reduction in size, and removes any marks or ridges in the wire that may be caused by the edging rolls. (The 2-stand mills are identical except that the first upright stand and first set of edging rolls are omitted.)

★ ★ ★

IF the desired finished dimensions cannot be produced in one pass through the mill, the wire is put through a second or third time. The rule-of-thumb method for determining the number of passes which a certain size must have is: (1) When the ratio of width to thickness of the finished wire is 2 to 1 or less, use one pass on a 2-stand mill; (2) when the ratio of width to thickness is greater than 2 to 1, but not over 4 to 1, use one pass on a 3-stand mill; (3) when the ratio is greater than 4 to 1, but not over 8 to 1, use two passes on a 3-stand mill; (4) when the ratio is greater than 8 to 1, but not over 16 to 1, use three passes on a 3-stand mill. Combinations of one or more passes on a 3-stand mill plus one pass on a 2-stand mill may often be made to advantage. Thus, one 3-stand mill will accomplish in one pass the same result as two passes through a 2-stand mill.

★ ★ ★

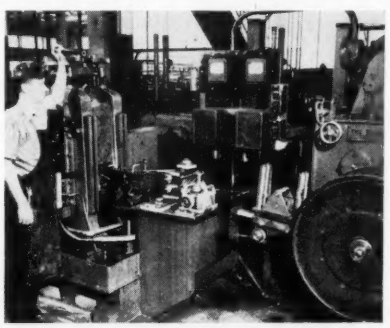
CLOSE tolerances must be maintained on both width and thickness. In most instances this tolerance is plus or minus one percent. Two magnetic gauges have been installed between the final stand and take-up spool of each mill to eliminate frequent stopping of the mills to check the wire with micrometers. The wire passes between two sets of rollers, one vertical for thickness and the other horizontal for width. The in and out movement of the rollers is recorded on the two dials mounted above the gauges in full view of the operator. In PR-4783 an operator is shown adjusting the last stand for proper wire thickness. These adjustments can be made with the mill in operation.

★ ★ ★

THE operating speed of the mill can be adjusted by the operator from his control station, depending on the size of the wire being produced. Maximum finishing speed for the medium wire sizes is approximately 1,800 fpm. For very wide sizes, the best finishing speed may be as low as 200 fpm.

★ ★ ★

EACH mill is equipped with a split-reel attachment which permits the wire to be skein-wound into coils weighing approximately 250 pounds. Each mill is also equipped to take-up the finished wire on one of two sizes of steel spools; a 30-inch diameter spool holds 1,000 pounds of wire; a 22-inch spool holds 500 pounds of wire.



PR-4783—Watching the thickness and width magnetic gauges, an operator adjusts the last stand of a three-stand Torrington mill to produce the proper finished wire dimension. These adjustments can be made with the mill in operation.

★ ★ ★

Annealing

WESTINGHOUSE bell-type electric furnaces are used for annealing (See I on Flow Chart). Ten 66-inch and ten 36-inch bases, and four furnaces are available for this operation. Spools of wire are placed on a furnace base. These are then completely covered by a stainless steel hood, whose bottom edge dips into a water seal to prevent the entry of air during annealing. Since copper has a great affinity for oxygen as well as hydrogen at the annealing temperature, an Exogas protective atmosphere for bright annealing of copper wire is supplied to the interior of the hood. Each of three Exogas generators can supply 3,000 cubic feet per minute.

★ ★ ★

AFTER a hood is placed over a load on the annealing furnace base, Exogas is forced through the load and exhausted into the outside air for a long enough period of time to insure the exclusion of all raw air. The furnace proper after being set down over the hood will be left in place until the entire load has been heated to a temperature of approximately 700°F. The inert gas is forced into the hood during the entire annealing cycle, maintaining a positive relative pressure at all times. The furnace is then removed and a water spray allowed to play over the outside of the hood to expedite cooling. The hood cannot be removed to unload the base until the copper inside has cooled to a point at which oxidation will not take place when it comes into contact with raw air.

★ ★ ★

Insulating Rectangular Wire

RECTANGULAR wire may be insulated in various ways, depending upon its ultimate use. For

(*Please turn to page 705*)

ON TO CHICAGO ! !

for a GREAT EVENT, a GOOD TIME and a PROFITABLE FOUR DAYS:

THE WIRE ASSOCIATION ANNUAL CONVENTION

OCTOBER 17-20, 1949, INCLUSIVE, LA SALLE HOTEL

As a wire man, which includes our suppliers, your attendance at and participation in the meetings and functions of this Convention will contribute much to its success. A big meeting is indicated. You can't afford to miss it—technical papers of unusual merit, old friends to see and new people you should get to know. Here's the program:

PAPERS COVERING:

Handling Wire and Wire Products in the Wire Mill
Plastic Strain and Hysteresis in Drawn Steel Wire
Back Pull Wire Drawing
Continuous Cleaning
Processing of Stainless Steel Wire
Symposium on Carbide Dies
Symposium on Diamond Dies
Wire Welding

Protective Atmospheres for Annealing Non-Ferrous Wires
The New General Electric Company Copper Mill
The Manufacture of Nickel and Monel Wires
Application of Tin Coating in the Wire Industry
Nylon Insulation

PLANT INSPECTION: Visit to Joliet Mill, American Steel and Wire Company.

FUNCTIONS: Annual Luncheon, at which the Mordica Memorial Lecture will be delivered by Col. Allen B. Dove, Steel Company of Canada, Ltd.
Wire Association Annual Meeting of Members.
Stag Dinner and Smoker

There will be a registration fee of $5.00 for those attending the technical sessions and informal meetings.

Members should make reservations for rooms at the La Salle Hotel direct to the Secretary of the Wire Association. DO IT NOW, TODAY. We are expecting you!

This will be a meeting of top importance and a large attendance is expected. DON'T MISS IT!

THE WIRE ASSOCIATION

RICHARD E. BROWN, Executive Secretary

300 MAIN STREET STAMFORD, CONN.

PROGRAM

Annual Convention of The Wire Association

La Salle Hotel, Chicago, Ill., October 17-20, 1949

Wire Association Headquarters at The La Salle Hotel
Will be Open from Monday, October 17, Every Evening During the Convention
— Come and Get Acquainted!

THERE WILL BE A REGISTRATION FEE OF $5.00 FOR THOSE ATTENDING THESE TECHNICAL SESSIONS AND INFORMAL MEETINGS

ADMISSION WILL BE BY BADGE ONLY

Discussions Will Be Held on the Papers Presented and These Discussions Will Be Published in the January, 1950, Issue of Wire and Wire Products

WIRE ASSOCIATION PROGRAM COMMITTEE FOR 1949 CONVENTION

La Salle Hotel, Chicago, Ill., Oct. 17-20, 1949

★ ★ ★

Fred M. Crapo, President
Indiana Steel & Wire Co., Muncie, Ind.
GENERAL CHAIRMAN

★ ★ ★

FERROUS DIVISION

A. E. Glen, Manager of Die Sales,
Carboloy Company, Inc.,
Detroit, Michigan, Chairman

MEMBERS

Wm. E. Hitchcock, Jr., Vice President
Atlantic Wire Company,
Branford, Conn.

James W. Galloway, Plant Engineer,
B. Greening Wire Co., Ltd.,
Hamilton, Ontario, Canada

Dartrey Lewis, Chief Engineer,
Development Engineering,
John A. Roebling's Sons Co.,
Trenton, N. J.

F. L. Hayden, Works Manager,
Steel Company of Canada, Ltd.,
334 Wellington St., No.,
Hamilton, Ontario, Canada

A. M. Reeder, Metallurgical Engineer,
Jones & Laughlin Steel Corp.,
Third & Ross Streets,
Pittsburgh, Penna.

H. B. Clark, General Manager
Vascoloy-Ramet Corp.,
800 Market Street,
Waukegan, Ill.

NON FERROUS DIVISION

L. C. Whitney, Chief Metallurgist,
Copperweld Steel Company,
Glassport, Pennsylvania, Chairman

MEMBERS

E. P. Hall, Metallurgist
Kennecott Wire and Cable Company,
Phillipsdale, Rhode Island

C. J. Beneke, Manager,
Reynolds Metals Company, No. 7,
2500 S. Third St.,
Louisville, Ky.

Matthew J. Donachie, Metallurgist,
The Beryllium Corporation,
Reading, Penna.

J. H. DeKlyn, Works Manager,
Fabricating Division,
Aluminum Company of America,
Massena, New York

C. H. Hannon, Metallurgist,
Pittsfield Works Laboratory,
General Electric Company,
Pittsfield, Mass.

Dr. F. R. Morral, Associate Professor,
Department of Materials Engineering,
Syracuse University
Syracuse, New York

★ ★ ★

GENERAL ACTIVITIES

SMOKER-DINNER

Eber J. Hubbard, Jr., Vice President
Hubbard Spool Company
Chicago, Ill.

Richard E. Brown
Executive Secretary
THE WIRE ASSOCIATION
300 Main St., Stamford, Conn.

RESERVATIONS AND REGISTRATION

Mrs. Ruth S. Spengel, Secretary and Treasurer
WIRE AND WIRE PRODUCTS
300 Main St., Stamford, Conn.

All wire mill men and suppliers are invited to attend this meeting, see how the Association functions and participate in the activities.

All papers must be in the hands of the committee by July 1—and those selected will be preprinted in Wire and Wire Products October 1949 issue in advance of the meeting. Title to papers accepted will be given the Wire Association and duly copyrighted at time of publication. All papers are eligible for consideration for the Annual Medal Award.

Hotel reservations should be made by members of the Wire Association direct to the Secretary.
MAKE YOUR PLANS NOW TO ATTEND AND SEND YOUR RESERVATION PROMPTLY

MONDAY, OCTOBER 17

9:00 A. M.
REGISTRATION

10:30 A. M.
DIRECTORS' MEETING

12:30 P. M.
PROGRAM COMMITTEE LUNCH

— The Technical Sessions —

La Salle Hotel, Chicago, Ill., October 17-20, 1949 Inclusive.

MONDAY, OCTOBER 17 Morning Session—11 A. M.	A. F. Anjeskey Sales Manager Chairman of Meeting	Cleveland Tramrail Div. Cleveland Crane & Eng. Co. Wickliffe, O.
PAPER: "Handling Wire & Wire Products in the Mill"	by F. L. Hayden Works Manager	Steel Company of Canada Hamilton, Ont., Canada
PAPER: "Handling Wire & Wire Products in the Mill"	by J. W. Galloway Chief Engineer	B. Greening Wire Co., Ltd. Hamilton, Ont., Canada

MONDAY, OCTOBER 17 Afternoon Session—2 P. M.	Curtis Voigtlander Supt. Wire Mill Chairman of Meeting	Union Wire Rope Corp. Kansas City, Mo.
PAPER: "Plastic Strain & Hysteresis in Drawn Steel Wire"	by R. S. Brown Chief Metallurgist	Rylands Brothers, Ltd. Warrington, England
PAPER: "Back Pull Wire Drawing"	by H. J. Godfrey Development Engineer and Dartrey Lewis Chief Development Engineer	John A. Roebling's Sons Co. Trenton, N. J.

TUESDAY, OCTOBER 18 Morning Session—10:00 A. M.	R. S. Simmons General Metallurgist Chairman of Meeting	Keystone Steel & Wire Co. Peoria, Ill.
PAPER: "Continuous Cleaning"	by D. L. Doty Metallurgist	Jones & Laughlin Steel Corp. Aliquippa, Pa.
PAPER: "Processing of Stainless Steel Wire"	by S. P. Watkins Asst. to Gen. Mgr.	Armco Steel Corp. Baltimore, Md.

TUESDAY, OCTOBER 18
Afternoon Session—1 P. M.

THERE WILL BE A PLANT INSPECTION

TRIP TO

The Joliet Mills

American Steel & Wire Company

RESEARCH PAPERS ARE PREPRINTED IN THE OCTOBER ISSUE OF WIRE AND WIRE PRODUCTS

The Discussions and the Mordica Memorial Lecture will be printed in the January, 1950, issue of Wire and Wire Products

Papers not received in time for preprinting will be published in the November and December issues of Wire and Wire Products

— The Technical Sessions —

La Salle Hotel, Chicago, Ill., October 17-20, 1949, Inclusive

WEDNESDAY, OCTOBER 19
Morning Session—10:00 A. M.

E. J. Crum
General Foreman Wire Drawing
Chairman of Meeting

Bethlehem Steel Corp.
Sparrows Point, Md.

— SYMPOSIUM ON TUNGSTEN CARBIDE DIES —

Walter Schofield, Die Service Engineer
Carboloy Co.
Detroit, Mich.

E. A. Henry
Die Engineer
Vascoloy-Ramet Corp.
Chicago, Ill.

E. R. Duthaler
Jones & Laughlin Steel Corp.
Aliquippa, Pa.

E. T. Miller
Sales Eng. Dept.
Firth Sterling Steel & Carbide Corp.
McKeesport, Pa.

George Fecsen
Pittsburgh Steel Corp.
Pittsburgh, Pa.

Art Hedman
Wickwire Spencer Steel Div., Colorado Fuel Iron Corp.
Buffalo, N. Y.

PAPER:
"Welding in the Wire Industry"

J. H. Corson
Metallurgist

John A. Roebling's Sons Co.
Trenton, N. J.

WEDNESDAY, OCTOBER 19
1:00 P. M.

WIRE ASSOCIATION LUNCHEON—
THE MORDICA MEMORIAL LECTURE

Col. Allan B. Dove,
Superintendent
Dominion Works
Steel Company of Canada, Ltd.
Lachine, Quebec, Canada

— Presentation of the Wire Association Medal Award for 1948 —
To Reginald S. Brown, Rylands Brothers, Ltd., Warrington, England.
(Members are at liberty to bring guests. Ladies are welcome)

WEDNESDAY, OCTOBER 19
Afternoon Session—3:30 P. M.

SYMPOSIUM ON DIAMOND DIES

Athos D. Leveridge,
Executive Manager,
Chairman of Meeting

Industrial Diamond
Association of America, Inc.
New York, N. Y.

WEDNESDAY, OCTOBER 19
Evening Session—7:00 P. M.

ANNUAL DINNER - SMOKER — HOTEL LA SALLE
Eber Hubbard, Jr., Vice President
Hubbard Spool Company, Chicago, Ill.
Chairman of Committee

THURSDAY, OCTOBER 20
Morning Session—10:00 A. M.

D. Boyd
Metallurgist
Chairman of Meeting

Wire & Cable Div.
Northern Electric Co., Ltd.
Montreal, P.Q., Canada

PAPER:
"The Manufacture of Nickel and Monel Wires"

F. A. Bash
Asst. Vice Pres. and
Technical Director and
Stephen Posh

Driver Harris Company
Harrison, N. J.

PAPER:
"New General Electric Company Copper Mill"

by F. A. Arnold
Wire Div. Eng.

General Electric Company
Fort Wayne, Ind.

THURSDAY, OCTOBER 20
Afternoon Session—2:00 P. M.

Bruce W. Gonser
Research Supervisor, Non Ferrous Metallurgy
Chairman of Meeting

Battelle Memorial Institute
Columbus, Ohio

PAPER:
"Protective Atmospheres for Annealing Non-Ferrous Wires"

E. G. deCoriolis, Dir. of Research and
Orville E. Cullen, Chf. Metallurgist

Surface Combustion Corporation
Toledo, O.

PAPER:
"Nylon Insulation"

C. A. Litzler
Chief Engineer

Industrial Ovens, Inc.
Cleveland, O.

PAPER:
"New Development" in the Tinning of Wire

by Herbert Hirschland
Research Department

Metal & Thermit Corp.
New York, N. Y.

INDUSTRIAL DIAMOND ASSOCIATION
OF AMERICA, INC.

I. J. MEADE, President — JAMES A. ROSS, 1st Vice-President — WALTER J. MEINHARDT, 2nd Vice-President

Communications:
ATHOS D. LEVERIDGE
Executive Manager
& Secretary-Treasure
501 LEXINGTON AVENUE
NEW YORK 17, N. Y.
WICKERSHAM 2-1400

THROUGH several recent events staged by the **Industrial Diamond Association of America,** the attention of the public and the engineering world was focused upon the great service of the Wire Industry to the American Public in war and peace.

★ ★ ★

NEARLY one quarter of the items in huge displays exhibited by I. D. A. in Atlantic City and in Detroit were devoted to examples of the many wound parts which go into electronic devices, into motors, hearing aids, and a hundred and one other items in daily use by the public. It also included the world of electric lighting, as it depends entirely upon the product of diamond dies.

★ ★ ★

The 7th in a series of letters addressed to the Wire Drawing Industry.

BESIDES exhibiting these parts of assemblies, their use was forcefully impressed upon all beholders by the exhibition of miniatures of household appliances, ships, airplanes, and machinery so familiar in everyday life, and which depend upon drawn wires and their products.

★ ★ ★

OF course the I. D. A. made a feature of wire drawing for which the component parts were prepared by the Diemakers Committee of the I. D. A. under the chairmanship of **John W. Cowan** and by many of the members. This committee also comprises diemakers Vice Chairman Russell E. Conner, (Detroit Wire Die Co.), Paul Bieberich, (Fort Wayne Wire Die), Louis Chambre, (Balloffet Dies & Nozzle Co.), Fernand Durand, (Cochaud Wire Die Corp.), Otis G. Ferrier, (Indiana Wire Die Co.), Carl V. Luginbill, (Luginbill Wire Die Co.), David Rieder, (Ajax Industrial Supplies, Inc.), and William E. Roux, (Roux Wire Die Works). Also on exhibition were the fine type of industrial diamonds that are used in the production of diamond dies for wire drawing, diamond powder employed in the processes, and an ingenious pseudo demonstration series to indicate the reduction of wire from large diameters down to the super-fine sizes.

★ ★ ★

TRADE MARK REG. U. S. PAT OFF. MICRO-WELD MICROMETER PRECISION

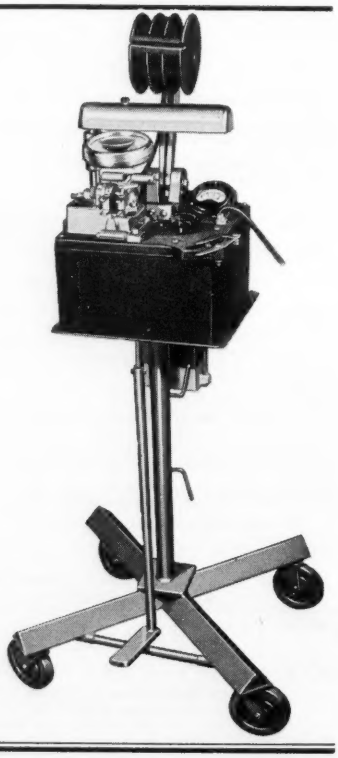
MODEL M-T MICRO-WELD BUTT WELDER

This welder was designed and developed expressly for welding all types of fine wire: Aluminum, Copper, Brass, Bronze, Steel and Steel Alloys, ranging in size from .005" to .020" diameter.

Unit design of frame, transformer and power sub-assemblies permit other range of sizes to suit requirements.

Equipped with a temperature indicating annealing and tempering device, voltage regulator and meter to compensate for voltage fluctuation, wire cutters, extra large 5" diameter magnifying glass, fluorescent light and extension cord. Welder can be supplied for bench mounting, or mounted on 4-wheel truck.

The adaptability of this unit for welding all types of wire, either ferrous or non-ferrous, in sizes from .005" to .020" diameter, make it ideal for the fine wire manufacturer.



MICRO PRODUCTS COMPANY
20 NORTH WACKER DRIVE CHICAGO 6, ILL.
Telephone: State 2-7468

THE first show took place at I. D. A.'s Convention in March. The second was especially staged and under the sponsorship of the American Society of Tool Engineers, in the Horace H. Rackman Auditorium in Detroit, May 12th, 13th and 14th. The Members of the Detroit Chapter of the A. S. T. E. previewed the exhibits and the public attended three shows, the discourse being made by Executive Manager Leveridge. All were under the supervision of the Chairman and Vice Chairman of the Toolmakers Committee of I. D. A., **Messrs. H. E. Robison** and **Robert F. Koebel**, while many committeemen assisted at the lectures to explain to the public and to students more details than could be given in the speeches. Prizes to engineering students were offered, for best papers on the subject. I. D. A.'s President, **I. J. Meade**, opened the first show.

★ ★ ★

THE theme behind all of these exhibitions has been the superior hardness of Diamond. A misapprehension on the part of so many engineers, based upon early instruction, is sought to be corrected. Diamond is from three hundred and fifty percent to thousands of percent harder than any other natural or synthetic mineral. The old Anno 1818 Mohs Scale, 1 to 10, while not intending to imply that 9 (corundum) is only ten percent less hard than 10 (diamond), has given that impression to many. Until modern times, there were no reliable scientific methods of determining relative hardness, as now accomplished by indentation and abrasion tests.

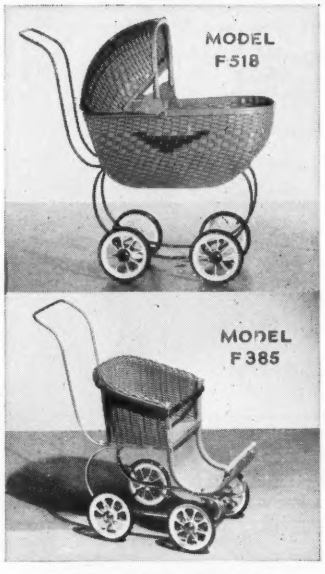
★ ★ ★

THE shows were supplemented in New York by a radio broadcast in which the Executive Manager was interviewed and in Detroit in what is probably industrial diamond's first television program. It is believed that these efforts constitute valuable support for both the wire and diamond die industries, in making the American public aware of modern achievement in those fields.

★ ★ ★

*South Bend Doll Carriages

made with
KEYSTONE WIRE



*South Bend Toy Mfg. Co.
South Bend 3, Indiana

Doll carriages . . . with attention to details that delight a youngster's heart . . . and durability to withstand vigorous child-play.

The Keystone extra-brite basic wire used in the frame, hood, axles and handle is easily formed, spot welded and provides proper base for enamel.

This is just another example of how special Keystone wire meets a specific need. If you have an industrial wire problem, let a Keystone Wire Specialist help solve it for you.

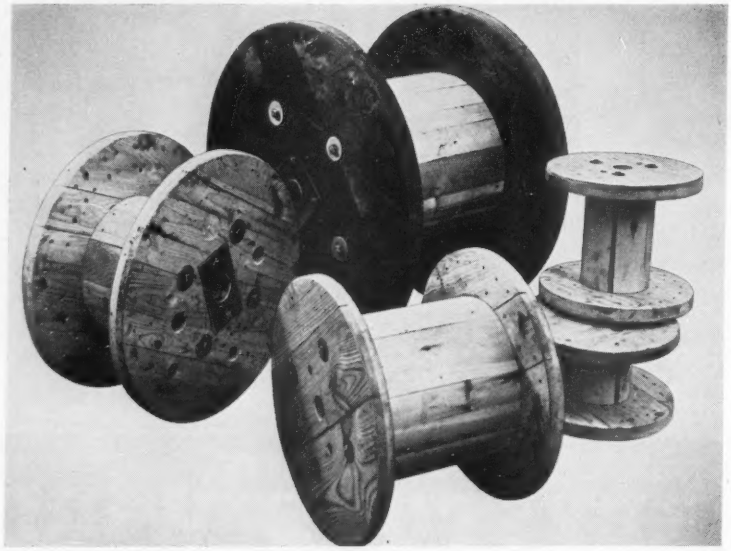
KEYSTONE
MUSIC SPRING WIRE
KEYSTONE STEEL & WIRE CO.
PEORIA, ILLINOIS

SPECIAL ANALYSIS WIRE
for all industrial purposes

KEYSTONE STEEL & WIRE COMPANY
PEORIA 7, ILLINOIS

REELS made of WOOD

RETURNABLE AND NON-RETURNABLE



Bridge SHIPPING and SHOP REELS are furnished assembled or knocked down, made to your specifications. Built to withstand severest handling. Sturdy, strong, low in cost. Made for

CABLE, ROPE and WIRE

Made in any size, from 12" to 96" in diameter.

ALSO, REEL HEADS FOR STEEL DRUMS

Send us your specifications and let us quote on costs.

BRIDGE MFG. CO., Inc.

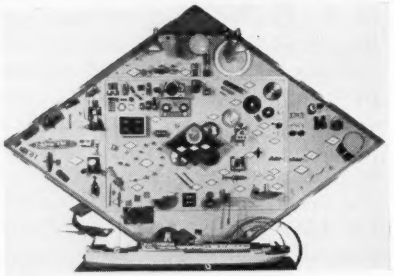
HAZARDVILLE • CONNECTICUT

IDA Shows New Hardness Chart at Detroit Exhibition

A FEATURE of interest to engineers and operators in the industrial world is a new Hardness Chart, created by the Industrial Diamond Association of America as part of its Exhibition in Detroit, May 12th to 14th, held under the sponsorship of the American Society of Tool Engineers.

★ ★ ★

THE Hardness Chart was unique in that it was accompanied by



One of two displays in the Exhibition staged by Industrial Diamond Association of America in Detroit's Rackham Memorial Auditorium. The show, featuring applications of industrial diamonds in public service, was sponsored by the American Society of Tool Engineers. This display features Diamond Die Wire drawing, wires, parts and end products of same.

amusing pictograms depicting the actual differences, by modern scientific tests, between the various minerals to which Dr. Mohs in the year 1818 gave arbitrary numbers in a scale from 1 to 10. While these numbers did indicate a relative hardness by showing which mineral would scratch the mineral of the number immediately below it, the numerology created an erroneous impression in the minds of most engineers, in that many have believed diamond to be only about 10% harder than corundum and the synthetic hard metals.

★ ★ ★

ACTUALLY, diamond ranges from 300 to well over 3,000 percent harder than the next hardest number on the scale, depending upon the way it is applied in relation to its crystal axis. The Hardness Chart was animated so as to permit a change in the level of the diamond factor to occur during the talk by Executive Manager A. D. Leveridge of the Industrial Diamond Association.

★ ★ ★

Outstanding Personalities of the Wire Industry

K. R. Beardslee Made President of American Supply and Machinery Manufacturers' Association

AT a meeting of the American Supply and Machinery Manufacturers' Association in Cleveland last April, **Kenneth R. Beardslee,** Carboloy Company, Detroit, Mich., was elected to the presidency of that group.

★ ★ ★

MR. BEARDSLEE served in the navy in World War I, following which he worked as a buyer for Mack Trucks for ten years. He switched from buying to selling in 1928, when Carboloy Cemented Carbides were first introduced, and joined the Kobel Wagner Diamond Company, then fabricators of Carboloy wire drawing dies.

★ ★ ★

K. R. Beardslee, Vice President and Marketing Manager of Carboloy Company of Detroit, Mich., and President of the American Supply and Machinery Manufacturers' Association.

★ ★ ★

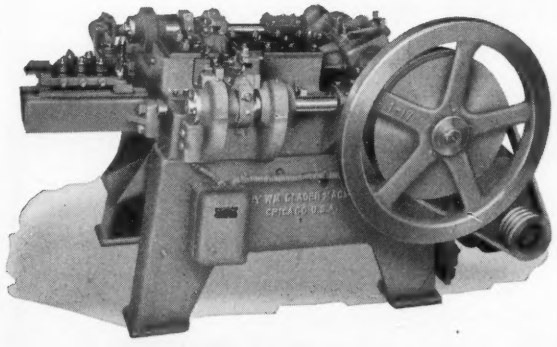
HE joined the Carboloy Company in 1930 as Sales Engineer, became Pittsburgh District Manager in 1933 and was made Carboloy Sales Manager in 1936. In 1942 Ken was named Vice President in Charge of Sales and was appointed to his present post of Vice President and Marketing Manager in 1948.

★ ★ ★

MR. BEARDSLEE is a member of the American Society of Tool Engineers, the Wire Association and the National Federation of Sales Executives. Probably no single man is better and more favorably known in wire circles and the Association of which he has been made the head can look forward to a constructive administration of its affairs under his very capable leadership.

★ ★ ★

GLADER HIGH SPEED WIRE NAIL MACHINE



MACHINE ARRANGED FOR INDIVIDUAL MOTOR DRIVE

High tonnage output, and low maintenance costs, have resulted in Glader Machines being accepted as standard equipment in every large nail mill built in the United States in the past twenty years.

Glader Machines are operating in most of the wire producing mills throughout the world.

These machines are made in eleven different types and sizes. This enables us to cover the range of sizes of nails produced with the greatest efficiency.

For further information please address,

WM. GLADER MACHINE WORKS
210 No. Racine Ave.
Chicago 7, Illinois

Export Dept.: 122 E. 42nd Street, New York 17, N. Y.

Westinghouse Announces Executive Changes

GWILYM A. PRICE, president of the **Westinghouse Electric Corporation,** Pittsburgh, Pa., announces comprehensive executive changes designed to provide more adequately for the firm's greatly expanded post-war activities and new product lines.

★ ★ ★

THE changes, made after more than six months' study, provide for:

1. **A more complete top-management staff;**
2. **Separation of industrial and consumer product responsibilities with the appointment of a general manager of industrial products and a general manager of consumer products;**
3. **Simplification of organizational structure and a realignment of sales responsibilities.**

★ ★ ★

FOUR major personnel assignments were announced involving new or substantially altered responsibilities at the vice presidential level.

★ ★ ★

THE new staff assignment is Vice President **L. E. Osborne,** primarily an operations official heretofore, assigned staff supervision over all the company's manufacturing activities, including all matters of production and industrial relations. Simultaneously he retains operating responsibility for five major manufacturing divisions.

★ ★ ★

JAMES H. JEWELL, recently-elected vice president, takes over staff supervision of all sales and marketing on a company-wide basis.

★ ★ ★

JOHN K. HODNETTE, vice president and head of the Transformer Division at Sharon, Pa., becomes general manager of industrial products with headquarters at Pittsburgh. Reporting to him will be all operating divisions making industrial goods as well as the district sales organizations which sell these goods.

★ ★ ★

JOHN M. McKIBBIN, also a recently-elected vice president and former head of advertising and sales promotion, now is appointed general manager of consumer products with responsibility for operation and distribution of the Appliance Division and the Home Radio Division.

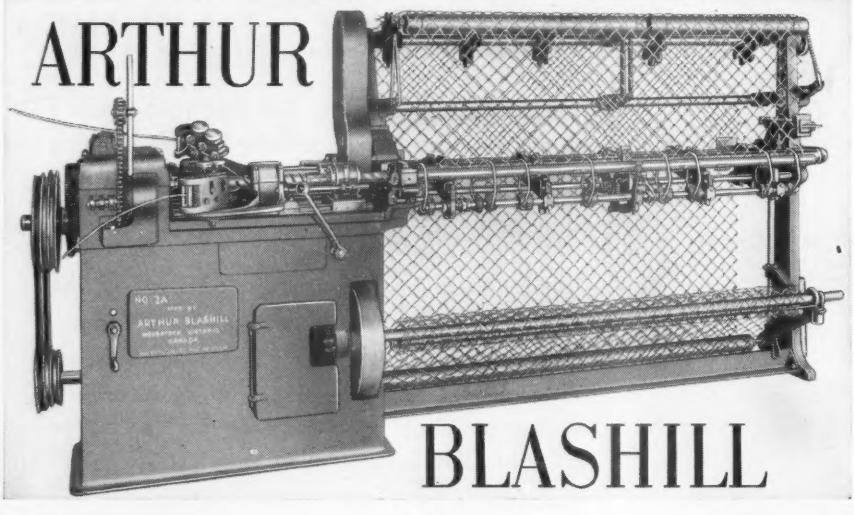
★ ★ ★

THIS marks the first time responsibility for industrial products has been separated from consumer product responsibility at top level. Both Mr. Hodnette and Mr. McKibbin report directly to the president.

★ ★ ★

WESTINGHOUSE sales volume in 10 years has increased from $182,461,879 in 1938 to $970,673,847 in 1948 and average employment has soared from 42,402 in 1938 to approximately 98,000 currently. The objectives of these

ARTHUR



BLASHILL

CUT

LABOUR and OVERHEAD

in Manufacturing

CHAIN-LINK FENCE

No. 2 A Machine marks a New Period in its production

CUTS LABOUR —

CUTS FLOOR SPACE —

CUTS POWER —

CUTS MAINTENANCE —

CUTS NOISE

Widest range of Gauges, Meshes and Heights By FAR the HIGHEST OUTPUT

(See previous ads. for details)

WOODSTOCK, ONTARIO, CANADA (formerly at Birmingham, England)

changes are primarily to simplify the company's organization structure, to provide more complete company-wide staff assistance to top management and to improve the organization of the company's sales activities.

★ ★ ★

Lumley Becomes Assistant to Vice President in Charge Operations, A. S. & W.

HARRY H. LUMLEY, Chicago district manager of operations for **American Steel & Wire Co.** and a veteran of the steel industry who has been associated with United States Steel Corporation since the year it was organized, has been appointed assistant to the vice president of operations of the Wire Company.

★ ★ ★

JOHN R. GAUT, presently assistant manager of operations, will succeed him as Chicago district manager of operations for the U. S. Steel subsidiary, effective immediately. Mr. Lumley will continue to maintain his headquarters in Chicago.

★ ★ ★

MR. Lumley started his career with U. S. Steel as a messenger for Illinois Steel Company in 1901, several months after the Corporation was formed. His next assignment was that of telephone operator, and later as storehouse clerk. In 1910 he was transferred to Minnesota Steel Company, another U. S. Steel subsidiary, at Duluth, Minn.

★ ★ ★

Philips Appointments and Changes

NORTH AMERICAN PHILIPS COMPANY, INC., New York announces the following appointments and changes, effective immediately:

★ ★ ★

DANIEL R. DONOVAN, formerly Vice President and Sales Manager of Callite Tungsten Corp., is appointed Sales Manager on Elmet and Fine Wire Products. He will be located at the new headquarters which have been moved from New York to Lewiston, Maine.

★ ★ ★

PHILIPS W. BLACKBURN will be located at the New York office in charge of export sales of all wire products and will continue to handle sales of Elmet Tungsten and Molybdenum, Diamond Dies and Fine Wire products in the Metropolitan New York area.

★ ★ ★

Martin Adds to Staff of Chemicals Division

MAKING an expansion of the firm's marketing activities, appointment of three additional members to the sales staff has been announced by **Harold M. Parsekian,** Director of Sales and Technical Service for **The Glenn L. Martin Company,** Chemicals Division.

★ ★ ★

Controlled

OPERATING TEMPERATURES TO 650° F

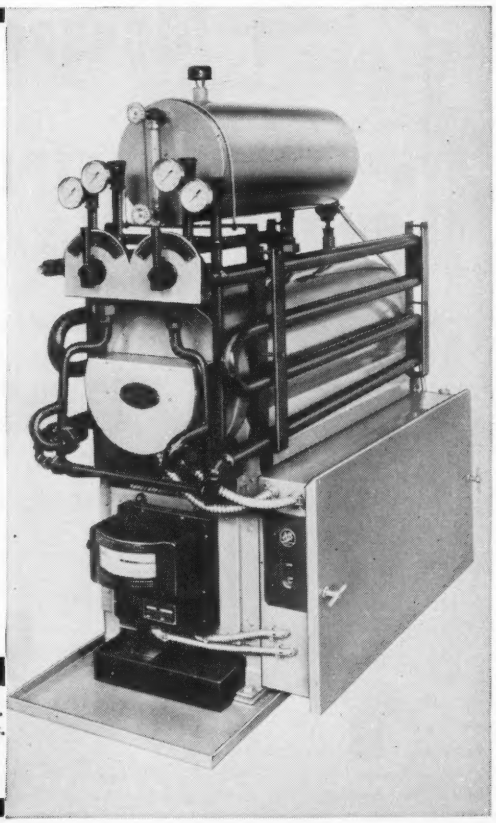
The Royle Temperature Control Unit is designed to eliminate uncertainty in extrusion and other industrial processes which require accurate and constantly maintained operating temperatures of extended periods of time. This compact and simply operated unit will supply—or drain—heat in accordance with process specifications as established by laboratory experiments. Features are built into the self-contained Royle Temperature Control Unit to assure maximum results with a minimum of maintenance.

WRITE FOR COMPLETE DETAILS

JOHN ROYLE & SONS ROYLE PATERSON N. J. 1880

PIONEERED THE CONTINUOUS EXTRUSION PROCESS IN

London, England	Home Office	Akron, Ohio	Los Angeles, Cal.
James Day (Machinery) Ltd.	E. B. Trout	J. W. VanRiper	J. C. Clinefelter	H. M. Royal, Inc.
REgent 2430	SHerwood 2-8262	JEfferson 3264	LOgan 3261



THESE new sales engineers have completed their indoctrination work and will undertake territorial assignments in the distribution of the vinyl chloride-type resin, Marvinol VR-10—and other products of the division. The newcomers are: **Frank L. Hemingway,** to cover the Chicago area east to Ohio; **Arthur W. LaCouture,** for Ohio and adjacent nearby points; and **Dr. C. W. Kleiderer,** for the New York City metropolitan area.

★ ★ ★

Haseltine to Represent Ajax Electric in Chicago

"O. M. HASELTINE has been appointed Sales Engineer for the **Ajax Electric Company** of Philadelphia. Mr. Haseltine will maintain offices at 608 South Dearborn Street, Chicago 5, Illinois, from which he will cover Northern Illinois, Northwestern Indiana, Southern Wisconsin and the State of Iowa. He was formerly connected with Service Associated."

★ ★ ★

The Wire Corporation Organized in Worcester

FORMERLY a division of the Spencer Wire Company of West Brookfield, Mass., that portion of the company making recording wire, is now operating as the **Wire Corporation,** Worcester 8, Mass.

★ ★ ★

THE company specializes in and sells throughout the world the established brand of specialty known as "Spencer Recording Wire".

★ ★ ★

WILLIAM H. MACDONALD is President-Treasurer and also a director together with **J. Lawrence Barsky** and **Jacob J. Jaffee. J. F. Reidy** is the Sales Manager of the company.

★ ★ ★

ALL new machinery and equipment was installed when the move to Worcester was effected.

★ ★ ★

THUS is perpetrated in the area in which the old Spencer Wire Company was organized in the earliest days of wire history in America, the good name **"Spencer".**

★ ★ ★

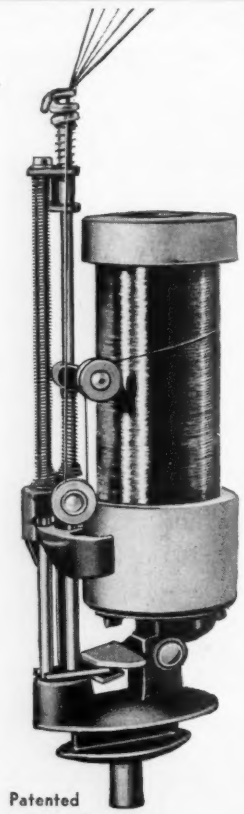
Carl M. Ott

CARL M. OTT, 56, supervisor of employment for **The Youngstown Sheet and Tube Company's** Youngstown district, died in a hospital June 26 of a cerebral hemorrhage. He was taken ill while at work.

★ ★ ★

MR. OTT, a native of Warren, O., spent most of his life in Youngstown. He joined The Youngtown Sheet and Tube Company in 1913 as an employment clerk, became assistant employment manager in 1919 and supervisor of employment in 1931. He served in the navy during World War I., and was granted a leave of absence after the war to work on the veterans' rehabilitation program.

★ ★ ★



Patented
2 BX - Special
MOSSPEED Carrier

MOSSPEED BRAIDER CARRIERS
FOR BRAIDING
MULTIPLE ENDS OF FINE WIRES

A special design MOSSPEED CARRIER and BOBBIN is supplied for braiding "SHIELDED" WIRE, ETC.

Will braid multiple ends of aluminum, brass, bronze or copper wire, etc.

TWO SHEAVE-WHEELS and SPECIAL-TOP-THREADEYE on carrier, together with new type BOBBIN provides an even wire "let-off" resulting in a high quality and uniform braided shield.

Consult our engineers regarding your braiding problems

MOSSBERG
Pressed Steel Corp.
18 WEST STREET
ATTLEBORO, MASSACHUSETTS, U. S. A.

European Agent
James Day (Machinery), Ltd., 90 Regent Street, London, W.I., England

A Review of Recent Wire Patents

NO. 2,472,089, COIL WINDER, patented June 7, 1949 by Linn S. Brennan, Dayton, Ohio.

The machine is adapted to wind antenna wire and includes an antenna loop housing, a plate removably mounted on the base of this loop-housing, parallel shafts journaled therein and provided with spaced friction driving cylinders, gears for driving both these cylinders in opposite directions and a device for yieldingly urging one of the cylinders toward the other during the driving operation.

★ ★ ★

NO. 2,472,099, RUST INHIBITING COATING COMPOSITIONS, patented June 7, 1949 by Loy S. Engle, Harrington Park, N. J., and Walter Fikar, Jackson Heights, N. Y., assignors to Interchemical Corporation, New York, N. Y., a corporation of Ohio.

This consists essentially in the reaction product obtained by heating together, to about 150°C., a heat-bodied glycerine oil and an acid alkyl phosphate, dissolved in a volatile solvent, there being present from about ½ to 10% by weight of alkyl phosphate, heat-bodied glycerine oil in at least approximately as great quantity as the phosphate but not exceeding about 30%, and 70% or more of volatile solvent.

★ ★ ★

NO. 2,472,684, PROCESS FOR REMOVING CORROSION PRODUCTS FROM SURFACES CONTAINING HEAVY METALS, patented June 7, 1949 by Carlo Rossi, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland, a Swiss firm.

Where heavy metals are resistant to the action of alkaline solutions, the inventor proceeds by treating the surfaces with an alkaline aqueous solution of polyhydroxybenzenes or polyhydroxydiphenyls, each of which contains at least two adjacent hydroxy groups, and their carboxylic acids, all these compounds being free from substituents other than hydroxy and carboxylic acid groups.

★ ★ ★

NO. 2,473,027 SPRING PRODUCT AND METHOD OF FORMING SAME, patented June 14, 1949 by Harold C. Keysor, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey.

The method is provided for forming a spring bar of round stock adapted to be coiled right-hand into a helical spring. There are nine claims.

Complete Description and Drawings of Patents May Be Had for 50 cents, outside the United States and Canada $1.00. Address, Wire & Wire Products, 300 Main St., Stamford, Conn.

NO. 2,473,706, SPRING ASSEMBLY FOR UPHOLSTERY, patented June 21, 1949 by William Walter Gleason, Chicago, Ill., assignor to Nachman Corporation, Chicago, Ill., a corporation of Illinois.

Included is a construction in which the end-coils of the springs of each row and end-coil portions of the springs of the outermost rows are disposed in overlapping relation to resilient border frames. Helical tie-wires encircle the border frames, the flanges of bridging wires and the portions of the springs overlapping the border frames.

★ ★ ★

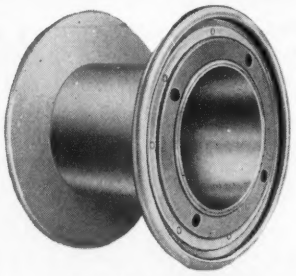
NO. 2,473,725, HAIR CLIP, patented June 21, 1949 by Emile Oswald, Rockaway Park, N. Y.

This clip is constructed wholly of wire. There are six claims.

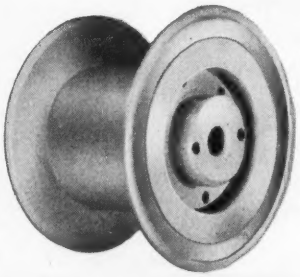
★ ★ ★

NO. 2,473,965, SELF-SUPPORTING AERIAL ELECTRIC CONDUCTING CABLE, patented June 21, 1949 by James J. Morrison and Alfred L. Duna, Worcester, Mass., assignors to The American Steel and Wire Company of New Jersey, a corporation of New Jersey.

It comprises a relatively high tensile strength flexible tenuous supporting element, and an externally accessible,



FINE WIRE HIGH SPEED
WIRE DRAWING SPOOLS



James Day (Machinery) Ltd.,
90 Regent Street
London W.I, England

MOSSBERG **PRESSED STEEL** CORP.

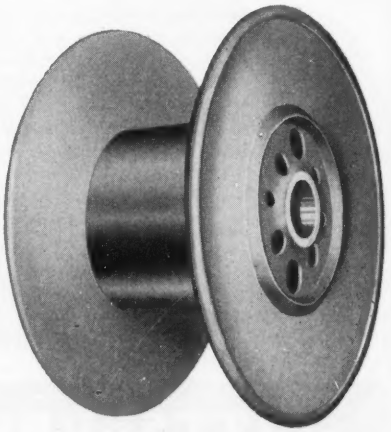
A complete line of HEAVY DUTY PRECISION SPOOLS and REELS especially designed for high speed wire drawing and annealing.

The degree of efficiency obtained by the HIGH SPEED WIRE DRAWING MACHINE is largely dependent upon the accuracy and durability of the take-up spool.

The use of our PRECISION SPOOLS will increase your machine efficiency and eliminate your spool difficulties.

Complete range of sizes.

MOSSBERG PRESSED STEEL CORP.
18 West Street,
ATTLEBORO, MASSACHUSETTS, U. S. A.



COMBINATION
500 lb. CAPACITY WIRE DRAWING—
ANNEALING — STRANDING — REEL.

co-extensive insulated electrical wire conductor having respective helical portions of right and left hand lay loosely surrounding the element and tie members binding the conductor to this element at the regions where the directions of the lays change.

★ ★ ★

NO. 2,474,051, ENDLESS BELT GRADER, patented June 21, 1949 by Bernis W. Hatch, Atlanta, N. Y.

Wire links comprise this belt and the construction of the same is said to be such that the articles fed onto the belt are distributed from its margins toward the center thereof.

★ ★ ★

NO. 2,474,179, ACID CLEANING COMPOSITION, patented June 21, 1949 by Francis N. Alquist and Charles W. Hopkins, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich., a corporation of Delaware.

For cleaning ferrous metal, the inventors provide an aqueous solution containing from 5 to 25 per cent of HCl, from 0.1 to 2 per cent of an organic nitrogen base of pyridine or quinoline and from 0.1 to 5 per cent glyoxal.

★ ★ ★

NO. 2,474,526, PICKLING OF STAINLESS STEELS, patented June 28, 1949 by John J. Healy, Jr., Brookline, Maurice H. Taylor, Stoneham, and Furio A. Abbiati, Longmeadow, Mass., assignors to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

An aqueous acid reacting non-electrolytic pickling bath for stainless steels is provided consisting essentially of water and active pickling agents of a non-oxidizing mineral acid and ferric fluoride, the mineral acid being present in the bath in an amount varying between 0.7 and 25% and the fluoride being present in an amount varying between 0.5 and 20%, the bath being substantially free of nitric acid.

★ ★ ★

NO. 2,474,528, COIL SHAPING APPARATUS, patented June 28, 1949 by Flavis E. Hook and Raymond O. Riggs, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware.

This apparatus is adapted to cylindrically shape a flat coil.

★ ★ ★

NO. 2,474,604, RUST-PREVENTING COMPOUNDS, patented June 28, 1949 by Jones I. Wasson and John C. Zimmer, Union, N. J., assignors to Standard Oil Development Company, a corporation of Delaware.

Disclosed is a composition consisting essentially of a mineral oil containing 0.01 to 0.1% by weight of an alkyl thioether of a C_2 to C_4 saturated fatty acid wherein the etherifying radical is attached to a carbon atom outside the carboxyl group in the acid, this alkyl radical containing 10 to 24 carbon atoms and 0.01 to 5% of a C_{10} to C_{22} fatty acid ester of a polyhydric alcohol having from 12 to 80 carbon atoms.

★ ★ ★

NO. 2,474,620, COILING MACHINE CONTROLLER, patented June 28, 1949 by Douglas W. Fath, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware.

For use with wire drawing machines having a reel for receiving and storing the drawn wire, the inventor provides an electronic regulator.

★ ★ ★

NO. 2,474,755, COIL WINDING MACHINE, patented June 28, 1949 by Leon E. Pamphilon, Yeadon, Pa., assignor to Airdesign Incorporated, Upper Darby, Pa., a corporation of Pennsylvania.

Electromagnetic controls are provided to afford locking of chain sprockets of the machine in accordance with the traveling positions of a carriage on which they are mounted. These sprockets engage opposite lengths of the chain which is also carried by sprockets mounted upon the base of the machine.

★ ★ ★

SEND IN
YOUR ORDER NOW
for the
1949 WIRE BUYERS
GUIDE

The SPECIALISTS in
Wire - Straightening and Wire - Cutting!

Diameter Range — 1/16" to .005"

PRECISION - Our Motto

DON'T hesitate to call on us when you are confronted with wire-straightening problems involving close tolerances and absolute accuracy. For seventeen years we have specialized in straightening and cutting all gauges of fine wire, hard or soft, ranging in diameter from one-sixteenth of an inch down to five-thousandths of an inch. We employ gun-barrel accuracy in straightening lengths from one inch to ten feet or any fractional part thereof. Ends cut absolutely clean without burrs.

ASK ABOUT OUR UNEXCELLED FACILITIES FOR CLEANING AND POINTING WIRE ALREADY STRAIGHTENED AND CUT.

ALL TYPES OF WIRE...

- Nickel
- Stainless Steel
- Bronze
- Brass
- Copper
- Alloy Wire
- Music Wire
- Tag Wire
- Florist Wire

Write us today!

Manufacturers of the famous ARMA PAPER CLIP

PITTSBURGH CUT WIRE COMPANY
1112-20 GALVESTON AVENUE · PITTSBURGH, PENNSYLVANIA.
TELEPHONE: CEdar 4702

G. E. Announces New Silicone Insulating Resin

A NEW silicone insulating resin designed to enable electrical equipment to operate at temperatures as high as 180°C has been announced by the **General Electric Company's Chemicals Division.** Designated G-E silicone resin #9989-1, the tough thermosetting insulation has general application for impregnating spun glass and asbestos wire coverings and for binding coils, windings, and other motor, generator, and transformer parts.

★ ★ ★

IT has excellent dielectric strength as well as superior heat and water resistance, dries tack free in less than 30 minutes at relatively low temperature and can be cured in conventional equipment at baking temperatures ranging up to 250°C. The material can be used as supplied or thinned with petroleum spirits or VM & P naptha.

★ ★ ★

C. O. Jelliff Brings Out New Resistance Wire Alloy

PROBABLY the greatest advance to date in resistance wires is a new alloy just announced by **The C. O. Jelliff Manufacturing Corporation** of Southport, Connecticut —"Jelliff Alloy 1000".

★ ★ ★

THIS alloy takes its name from the fact that it achieves a new high resistance of 1000 ohms per circular mil foot. Further, along with this unusual ohmage go great workability and an extended range within which the Temperature Coefficient of Resistance remains substantially constant: from 20°C to 100°C this factor does not exceed ±0.000025.

★ ★ ★

EQUALLY noteworthy are the significant gains in many other electrical and physical characteristics: for instance, "Jelliff Alloy 1000" has a resistance to surface corrosion equal to that of the best nickel-chromium alloys—it's thermal EMF against copper is as low as the lowest—its high ductility, great tensile strength and easy solderability make it fast and easy to handle in all manufacturing processes—its low Coefficient of Linear Expansion assures great dimensional stability of resistor windings—and "Jelliff Alloy 1000" is non-magnetic.

★ ★ ★

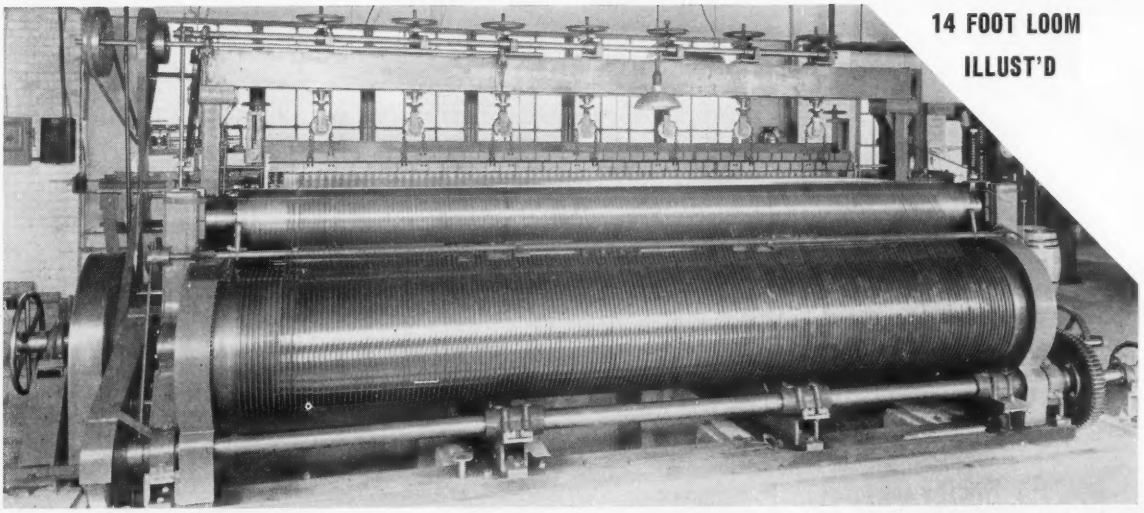
THESE characteristics of "Jelliff Alloy 1000" mean more compact windings and lower cost—less bulk per ohm, more ohms per dollar.

★ ★ ★

"JELLIFF Alloy 1000" is drawn to all standard diameters from 0.0100" to 0.0009" and also in small ribbon sizes. Full information regarding all electrical and physical properties, applications, etc. can be had from the sole manufacturers, The C. O. Jelliff Mfg. Corporation, Southport, Connecticut.

★ ★ ★

WIRE WEAVING LOOMS FOR **INDUSTRIAL WIRECLOTH** **FLY SHUTTLE LOOMS**



14 FOOT LOOM ILLUST'D

Offers many important features
All steel welded construction for rigidity and long satisfactory service
Precision in workmanship, operation and production
Built in st'd models 3', 4' 6'-8'-10', 14', 20' or to your special specifications

Write your requirements to

BRUCKNER-MITCHELL, INC. 420 W-45th St., New York 19, N. Y.

How Trained Technical Service Representatives Are Made

WITH industry today relying more and more on the recommendations of the engineers and specially trained representatives of its material and equipment suppliers as dependable sources of technical assistance, it is interesting to read about the comprehensive training course with which one manufacturer equips his field service specialists.

* * *

SUCH a course is graphically described in a special 40th anniversary issue of Oakite News Service, house organ of **Oakite Products, Inc.,** long-time suppliers of specialized industrial cleaning materials. A feature section of this issue shows how new field service representatives are trained in the latest technical developments and techniques of industrial cleaning and related operations. This is done by having the camera follow two trainees through the company's chemical research and service laboratories, into special lecture sessions by its field engineers, and through the many other phases of the course. Finally, an unusual photograph taken at the completion of the course shows a new service representative surrounded by some 750 pounds of demonstrating and testing equipment, technical literature and other service aids, ready to assume his new duties in providing industrial plants with the all-around technical advisory service demanded by today's complex cleaning and associated problems.

* * *

READERS interested in obtaining free copies of this special issue of Oakite News Service should address Oakite Products, Inc., 152A Thames St., New York 6, N. Y.

* * *

Hardness Tester Catalog

KENT CLIFF LABORATORIES, Peekskill, N. Y.. has issued a bulletin giving a technical description and full application information regarding the Kentron Micro Hardness Tester.

* * *

THIS instrument, using either a Knoop or 156° diamond pyramid indenty, registers dead-weight loads of four 1 to 1000 grams. It is a portable, bench model of precision construction.

* * *

FULL details will be found in Bulletin K-49, which will be sent by the manufacturers upon request.

* * *

New Folder on Fine Wire Dies

A FOUR-PAGE bulletin entitled, "3 Big Advantages for Wire Manufacturers" has been issued by the **Carboloy Company,** Detroit 32, Michigan. It announces and describes their newly designed RI.004" for drawing fine steel wires.

* * *

THE company will be glad to send you this and their complete die catalog D-126 upon request.

* * *

anneal wire the MODERN way!

You'll save money, you'll improve efficiency along many lines with the unique Ajax Electric Salt Bath wire annealing method. It requires less floor space, less labor, less maintenance. Heating cycles average less than 20 minutes, even on difficult jobs. There is no scaling, no decarburization, no explosion hazard, none of the bothersome problems entailed with atmosphere equipment. Salt bath treating does the work faster, better, cheaper!

Ideal for annealing low- or high-carbon and stainless steel wire and rod; annealing aluminum, and copper and silver alloys; and for descaling stainless and alloy steel wire in molten salt baths.

AJAX ELECTRIC COMPANY, INC.
Frankford and Delaware Aves. · Phila. 23, Pa.
The World's Largest Manufacturer of Electric Heat Treating Furnaces Exclusively

WRITE FOR YOUR COPY!
This 72-page Ajax booklet tells the entire story of salt bath heat treatment as applied throughout modern industry. Ask for Booklet 116.

AJAX HULTGREN ELECTRIC SALT BATH FURNACE

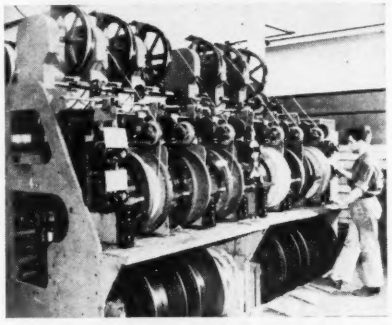
Westinghouse Copper Wire Mill at Buffalo, N. Y.

(*Continued from page* 689)

all insulations, annealed wire on 30-inch spools is supplied to the insulating room to receive its coating of cotton or glass yarn (See J on Flow Chart).

★ ★ ★

THE cotton insulating machine shown in PR-4810 consists primarily of a flyer, a capstan, and a fleeting mechanism. The supply wire comes off the 30-inch steel spools, around a guide sheave at the bottom of the machine, and straight up through the flyers to the capstan or drive wheel at the top of the machine. From the capstan the wire is passed over a sheave that moves back and forth a distance equal to the width or traverse of the inside of the wooden take-up spool (in this instance it is six inches). Thus the insulated wire is packaged on the spool in even layers. The flyer itself is a round plate or pot-shaped object which accommodates one ball of cotton insulating yarn. It has a nose piece which guides the cotton onto the wire and helps to smooth it evenly over the wire surface. When in operation, the flyer spins at speeds ranging from 3,000 to 5,000 feet per minute. The wire itself passes directly through the center of the flyer. In operation, the wire is pulled through the flyer by the capstan at a rate of approximately 30 feet per minute and receives a single spiral layer of cotton yarn as it passes through the rotating flyer.



PR-4810—Shown in operation is a cotton insulating machine used to wrap rectangular copper wire with a single spiral layer of cotton yarn. In some cases, two or three flyers are located in one machine, one above another, so that successive layers of yarn are applied in opposite directions by changing the direction of rotation of each successive flyer.

★ ★ ★

CERTAIN applications of cotton covered wire require more than one layer of cotton. In this case, two or three flyers may be located in one machine directly in a line, one above another. Successive layers of yarn are applied in opposite directions by changing the direction of rotation of each successive flyer.

★ ★ ★

APPLICATIONS of insulated rectangular wire which are subjected to high temperatures call for glass instead of cotton insulation. Glass fiber is applied in exactly the same manner as cotton yarn, except that the glass yarn must be given a further treatment of varnish to hold it in place and increase its resistance to abrasion.

★ ★ ★

Wean Equipment Corporation
CLEVELAND, OHIO
No. 1155 Farm and Field Fence Machine
Barbed-Wire Machine
Strip Reel and Slitting Unit
16 Block Wire Galvanizing Take-Up Frame
Entry End of Tube Straightener

THE WEAN EQUIPMENT CORPORATION are recognized as specialists in high-efficiency and wire mill and straightening equipment.

COLD ROLLING MACHINERY

For 36" Wide Material and Narrower

MILLS - REELS - SLITTERS - LEVELERS
COILERS - EDGERS - SCALE BREAKERS - SHEARS
SCRAP BALLERS - CONTINUOUS PICKLING

WIRE MILL EQUIPMENT

PATENTING, GALVANIZING AND TINNING TAKE-UP FRAMES
WIRE FLATTENING MILLS - SPOOLERS - NAIL GALVANIZING
AND BLUEING EQUIPMENT - FIELD FENCE AND
BARBED WIRE MACHINES

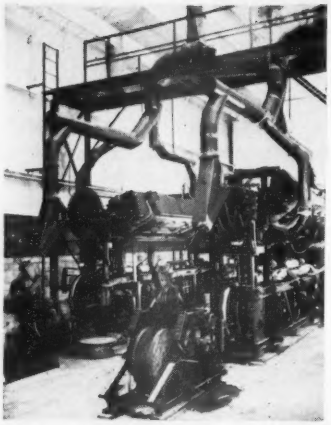
TUBE BAR AND SHAPE STRAIGHTENING MACHINERY

WEAN EQUIPMENT CORPORATION

22800 LAKELAND BLVD. • CLEVELAND, OHIO

THE glass insulating machines shown in PR-4803 are of a horizontal type. After the wire passes through the flyers and receives one or two layers of glass yarn, it passes through a vat of varnish, through wipers which remove all excess varnish, and into a baking or drying chamber. This chamber (or oven) is maintained at a temperature of approximately 650°F. As the wire comes out the other end of the oven, it goes over a sheave to change its direction, through another varnish applicator, and back through the oven. From this point the wire goes to the fleeting mechanism and onto the wooden shipping spool.

★ ★ ★



PR-4803—In this horizontal type glass insulating machine, rectangular copper wire receives one or two layers of glass yarn, passes through a vat of varnish, and into the baking or drying chambers. It then goes through another varnish application, back to the oven, and onto a wooden shipping spool.

Finished Rectangular Wire

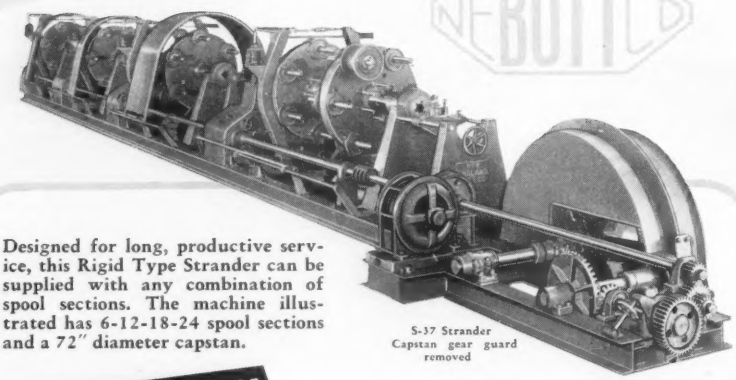
FINISHED rectangular wire, including bare wire, cotton covered and glass covered, is transported to the inspection station where each spool is carefully inspected for insulation thickness, overall size, etc. If acceptable, the spools are rolled to the packing and warehousing Station (See K on Flow Chart). Here they are individually wrapped, weighed, labeled and recorded. Spools of finished wire are stored in racks to await shipment.

★ ★ ★

Part II of this article will be published in the September, 1949 issue of WIRE & WIRE PRODUCTS.

for fast, uniform stranding

RIGID TYPE STRANDER



Designed for long, productive service, this Rigid Type Strander can be supplied with any combination of spool sections. The machine illustrated has 6-12-18-24 spool sections and a 72" diameter capstan.

S-37 Strander
Capstan gear guard removed

LOW MAINTENANCE

Anti-Friction Bearings on Line Shaft and Reel Mountings
Encased Drive Gearing operates in oil bath
Rugged plate steel welded construction
Large diameter Wire Guide Sheaves

AUTOMATIC CONTROLS

Stop Motion on each Wire
Solenoid Brakes

TIMESAVING SET-UP AND OPERATION

Quick-Acting Spool Locks
Each Head Reversible and Fitted with Speed Change

Write for further details and prices.

NEW ENGLAND BUTT COMPANY
Established 1842
304 PEARL STREET • PROVIDENCE 7, R. I., U. S. A.
JAMES DAY (MACHINERY) LTD., 90 REGENT ST., LONDON, W. 1, ENGLAND

Wire Annealing Described in Bulletin

THE current issue of "Salt Bath Types and Trends" published by the **Ajax Electric Company, Inc.**, Frankford at Delaware Ave., Philadelphia, Pa., contains a short article entitled, "Wire Annealing Approaches Perfection."

★ ★ ★

THIS describes the use of salt bath annealing of medium carbon steel and refers to other salt bath uses. Time savings and other advantages are pointed out.

★ ★ ★

A COPY of this bulletin, Vol. II, No. 1 is available upon request.

★ ★ ★

Leeds & Northrup Celebrates 50th Birthday

TO celebrate the beginning of its 50th anniversary, **Leeds & Northrup Company** recently played host to 3500 employees and their guests at a dinner, entertainment, and dance in Convention Hall. The company is an internationally known Philadelphia manufacturer of electrical measuring instruments, automatic controls, and heat treating furnaces.

★ ★ ★

Bakelite Increases Production Capacity

GREATLY increased facilities for the production of polyethylene resins are now in operation, it is announced by **Bakelite Corporation.**

★ ★ ★

ACCORDING to **George C. Miller,** vice president, General Sales Manager, Thermoplastics Department, "these new production facilities will more than double the amount of this plastic raw material that has been in extremely short supply since being made commercially available late in 1942."

★ ★ ★

POLYETHYLENE, an odorless, tasteless and non-toxic material, is used for a wide range of consumer and industrial applications such as packaging, flexible, nonbreakable bottles and closures, upholstery materials, molded household items, wire and cable insulation, as well as in the field of television.

★ ★ ★

THE new production facilities are located at South Charleston, W. Va., and are operated by Carbide and Carbon Chemicals Corporation, another unit of Union Carbide and Carbon Corporation. The new production makes available polyethylene resins in a wide range of molecular weights and colors.

★ ★ ★

WHEN the rated capacity of the new facilities is reached in the very near future, the production of polyethylene for the entire industry will reach approximately 50,000,000 pounds per year, as compared with about 15,000,000 pounds last year.

★ ★ ★

New Gas Burner Catalog

A NEW industrial gas burner catalog describing high and low pressure equipment for all common gaseous fuels has just been released by **Surface Combustion Corporation,** Toledo, Ohio. Divided into 10 sections and containing over 130 pages, the attractively maroon-bound catalog is designed as a ready reference source for all engineers concerned with the specification and design of gas combustion equipment.

★ ★ ★

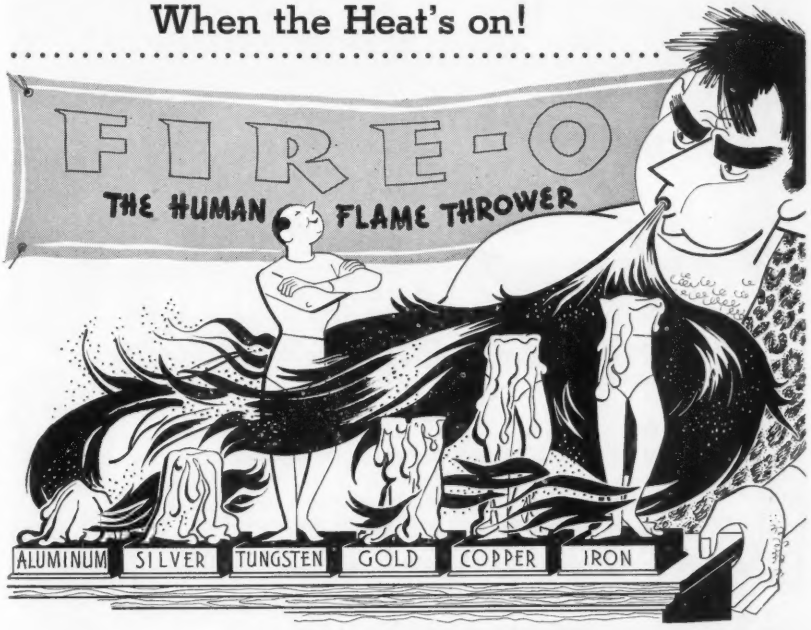
IN addition to presenting the more than 60 types of burners in 600 sizes supplied by 'Surface', the catalog contains much practical data as to the selection of burners for most industrial heating services with the various gaseous fuels. A useful Engineering Data section on furnace design and heat input requirement calculations has also been included.

★ ★ ★

THE wealth of burner information contained in this 'Surface' catalog should be easily accessible to all men who select and design combustion equipment. A copy may be obtained by writing to Surface Combustion Corp., Toledo 1, Ohio.

★ ★ ★

When the Heat's on!



BECAUSE the *melting point* of tungsten is higher than the *boiling point* of iron, copper, aluminum, silver, gold, and nickel, it is the perfect material for the application of heat in processes which involve a physical change in these metals. More and more, manufacturers are adapting improved techniques made possible by tungsten's exceptional qualities as a substitute for conventional methods.

ELMET Tungsten offers unique possibilities to manufacturers with production problems calling for a metal which combines the features of strength, hardness, ductility, and resistance to unusually high temperatures. North American Philips can supply tungsten in powder, rod, or wire form to your precise specifications. We will be glad to show you how ELMET Tungsten can fit your particular requirements.

* * *

North American Philips also specializes in drawing, enameling, and plating extremely fine wires in practically all metals and alloys.

So when you have a problem on Fine Wire, Tungsten, or Molybdenum, why not call on Fine Wire Headquarters—phone, wire, or write to North American Philips, makers of NORELCO Fine Wires and ELMET Tungsten and Molybdenum products.

NORTH AMERICAN PHILIPS COMPANY, INC.

Dept. FE-8, 100 East 42nd Street, New York 17, N. Y.

The ECA and Small Business

AMONG the amendments to the **Economic Cooperation Act** of 1948 is Section 112 (i) relating to small business. This states:

> **"The Administrator is directed to assist small business by making available to suppliers in the United States advance information with respect to proposed purchases under the E.C.A. program. He is also directed to make available to prospective purchasers in the participating countries information as to commodities and services produced by small business men in the United States. He is further directed to appoint a special assistant to assist him in this program."**

★ ★ ★

New Filter Cloth Produced by Roebling

JOHN A. ROEBLING'S SONS COMPANY, Trenton 2, N. J., have announced a new wire filter cloth made of Hastelloy, a high-strength nickel-base alloy that has unusual corrosion resistance and that will withstand the corrosive action of nearly all acids over a wide range of concentrations and temperatures. It is made in two grades, B and C, and the characteristics of each are given in a chart contained in a new folder recently issued. Copies are available from the Woven Wire Fabrics Division of the company.

★ ★ ★

Marvinol Article Describes Conduit Tubing Uses

HOW Marvinol resin is used in aircraft in a product supplied to the **Martin Company** by a customer of its own Chemicals Division, is revealed in the article, "From Dollies to Dreadnaughts," in the March issue of the Martin Star.

★ ★ ★

THE article describes the installation of "Turbo" electrical conduit on the AM-1 Mauler, as a protective covering for exposed sections of the cable comprising the aircraft's power distribution system. The manufacturer of "Turbo" and "Turbotherm" products, Electrical Insulation Corporation, of Willimantic, Connecticut, is a constant user of Marvinol for its entire range of vinyl resin-base electrical wire and cable coverings, mechanical tubing and other extruded items.

★ ★ ★

THIS tubing, the article points out, "is transparent so that the extent of any battle or other damage to the cables inside can be determined without removing the conduit—a necessary routine with metallic or other opaque coverings. Bullets passing through metallic conduit, moreover, often push the ragged metal edges in against the conductors—causing a short-circuit.

★ ★ ★

"THE plastic conduit is more durable and brings a weight-saving advantage to the aircraft designer. Its transparency makes possible a visual inspection of the assemblies, obviating removal of the tubing. Vinyl resin-base extrusions have a number of other applications to aircraft, as in ignition cable insulation and for covering the copper strips attached to the trailing edge to dissipate static on the wings."

★ ★ ★

To meet
your ECA requirements
If it can be wound on a reel, spool or bobbin, Apco Mossberg can fill your needs . . . export or domestic.
We are now participating in ECA export business and our plant is fully equipped to manufacture almost any conceivable kind, type and size of steel spool, reel or bobbin, in large quantities or small.
Our experienced engineering department is at your service. We know spools, reels and bobbins, their characteristics and limitations, and welcome every opportunity to put our 55 years of experience to work for you.
Write for our illustrated brochure containing useful information on a wide variety of our spool and reel products.
APCO MOSSBERG COMPANY
The Original Manufacturers of Reels & Spools
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Pacific Coast Rep.
Jack P. Williams, Jr.
215 Market Street
San Francisco, Calif.
Canadian Rep.
Hugh P. Williams & Co.
47 Colborne St., West
Toronto, Ont., Canada

New Plastic Coating Material

AT a luncheon for the press in May, **L. Sonneborn Sons, Inc.** announced a new phenolic plastic coating material of unusual toughness and durability. It is said to be the toughest plastic so far made.

★ ★ ★

ITS applications are broad. It can be used as a glue for wood or metal, as a coating for wood, tile, metal or other surfaces where a high wear, heat, stain, acid scratch or other resistance is required. It is good for vats and tanks.

★ ★ ★

THE material is supplied by dipping, brushing or spraying and air dries in about four hours.

★ ★ ★

IT is expensive—$12.50 a gallon—but this is said to be offset by its exceptional durability. The company, located at 88 Lexington Avenue, New York 11, N. Y. will be glad to furnish details upon request.

★ ★ ★

New Catalog Describes Pneumatic Cylinders

A NEW 12-page catalog has been issued by the **James L. Entwistle Company**, 43 Church St., Pawtucket, R. I., describing their pneumatic cylinders for application to various types of machinery used in industrial fields. Such pneumatic cylinders, for instance, are used on pay-off stands to raise and lower heavy reels of cable into position, on coiling machinery to shift the coiling operation from one head to the other, etc. There are innumerable uses to which this type of cylinder may be put in handling heavy lifting or shifting jobs.

★ ★ ★

THE catalog gives pictures, drawings, specifications and prices of the different models and parts, including fittings and mountings. The JLE Pneumatic Cylinder is simple and extremely rugged and is described as "A workhorse cylinder at a work-horse price".

★ ★ ★

SEND for catalog 20A.

★ ★ ★

Nichols Becomes Member of the Producers Council

THE **Nichols Wire and Aluminum Company**, Davenport, Iowa, manufacturers of aluminum nails and other building products, has been elected to membership in the Producers' Council.

★ ★ ★

THIS organization has active chapters in thirty cities. It is closely affiliated with the American Institute of Architects and is composed of some of the nations foremost manufacturers of building products.

★ ★ ★

Booklet on Wire Coating

A USEFUL treatise on coating compounds for wire is contained in a new 20-page booklet issued by the **Magnus Chemical Company, Inc.**, Garwood, N. J., entitled: "Magnus Metalcoat No. 267".

★ ★ ★

IT treats of the use of this material on bright finish, stainless, alloy steel, rope, tire bead, music, welding, cold heading, coat hanger, nail, fence, pin, staple, paper clip, hairpin and metallic coated wires and wire for wet drawing.

★ ★ ★

FOR IMPROVED--CONTROLLED--ECONOMICAL
PICKLING
USE
Rodine®
THE WORLD'S STANDARD INHIBITOR

A little "RODINE" in the pickling bath saves both acid and metal.

You save money when you pickle with "RODINE"-controlled acid. Scale removal is facilitated—over-pickling is prevented—hydrogen embrittlement is minimized.

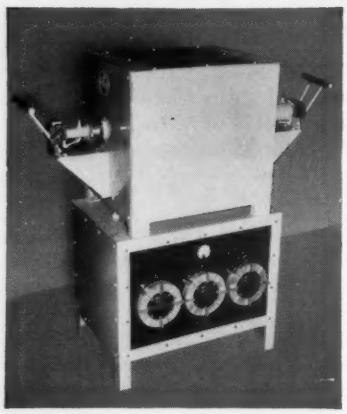
"RODINE" in addition to saving good metal and prolonging the life of the acid bath—assures cleaner, brighter surfaces—holds down acid fumes—improves working conditions.

"RODINE" more than pays for itself in savings of acid and metal.

CHEMICALS ACP PROCESSES
RUST PROOFING AND PAINT BONDING
Granodine *
Duridine *
Alodine *
Lithoform *
Thermoil-Granodine *
RUST REMOVING AND PREVENTING
Deoxidine *
Peroline *
PICKLING ACID INHIBITORS
Rodine * ®

For bigger and better production—use "RODINE".

Pioneering Research and Development Since 1914
AMERICAN CHEMICAL PAINT COMPANY
AMBLER, PA.
Manufacturers of Metallurgical, Agricultural and Pharmaceutical Chemicals



Harper Tube Furnace Model GT-20 HM-30

Harper

HIGH TEMPERATURE
Electric
TUBE FURNACES

For General Research

Temperatures to 3000° F

Research laboratories have a need for a small high temperature atmosphere test furnace for research on new products and new methods. The above furnace provides economical equipment for the intermittent testing of small samples. Materials can be heated to maximum temperatures and cooled quickly, enabling tests to be made during a working day with a saving in laboratory time. Power requirements are low and when working with special atmospheres gas lines can be turned off when firing is completed.

Uses of this furnace include: Sintering, Brazing, Heat Treating, Bright Annealing, Testing in Special Atmospheres, and General Research.

The above furnace is available in several sizes. Harper Engineers will be glad to work out special features to meet individual heat treating needs.

Write for Bulletin No. 1148.

HARPER
ELECTRIC FURNACE CORPORATION
1444 Buffalo Ave. Niagara Falls, N.Y.
Representatives in principal cities.

Look! One-Hand!

PORTER'S NEW HANDKLIP 6C WIRE CUTTER

A one-hand tool with two-hand tool power — cuts ¼" soft bolts in thread — 5/16" soft rods and cable. Hook blade pulls staples, gets under tight wire, lifts clenched nails.

HANDKLIP 6A Angle Cutter — same capacities as above, but cuts *close* — and no scraped knuckles. Excellent for form wires, cotter pins, protruding bolts or screws.

HANDKLIP 6T Shear Cutter — cuts 5/16" baling or box wire steel strapping up to .035" x 1¼" on bales, boxes, cartons, crates, also steel strip stock. A "must" in shipping and receiving rooms, strip mills, on the farm.

All three HandKliP tools are 8" long, weigh ¾ lb., have tough, hard, alloy steel heads, grip-fitting handles, specially coated for non-slipping, weather and water resisting. Adjustment gives longer life.

Buy them at your leading supply house, hardware distributor or dealer. Available immediately.

Write for circular.

Don't Forget Those Redesigned Porter Two-Hand Cutters. A Tool for Every Purpose.

H. K. PORTER, INC., Somerville 43, Mass.

IMPROVED! PORTER CUTTERS

These popular two-hand tools are now 15 ways better. They're 30% stronger, 20% easier to handle and their capacity to cut cable, chain, rivets and other metals is far greater. Send for folder describing 15 new features.

Factors to Keep in Mind In Selling Under ERP

(*Continued from page 685*)

pared with $7,800,000,000 for the previous year deficit on capital and current accounts. Industrial production returned to 1938 levels during the year but living conditions remained below the prewar level because of the channeling of production into exports and investment.

★ ★ ★

Booklet on the ECA

THE **Economic Cooperation Administration** has issued a 20-page booklet entitled "American Business and European Recovery."

★ ★ ★

THIS defines and describes the ECA and gives, among other things, the following information:

How purchases are authorized under ECA
Whom the U. S. exporter should contact
Procurement authorizations
Import controls
Field offices and ECA executives
Trade lists available
Public Advisory Board names
Advisory Committee on monetary problems
Export licenses and import controls.

★ ★ ★

COPIES of this booklet may be procured by writing to the Economic Cooperation Administration, 800 Connecticut Ave., N.W., Washington 25, D. C.

★ ★ ★

New Plating Annode Reduces Scrap

THE **Udylite Corporation,** Detroit 11, Michigan, has designed a new annode hook called the "Uzall". This hook will not corrode and permits the complete immersion of the annode in plating solutions. The electrode can be completely used, with no ends to scrap, thus cutting waste and cost. For detailed information, please write the company direct.

★ ★ ★

The New Ajax Isothermal Quench Furnace

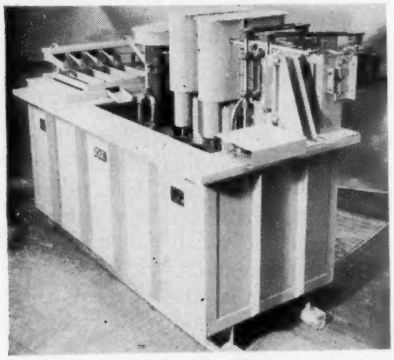
INDUSTRY'S widespread adoption of the martempering and austempering heat treating processes in the post-war era has dictated the need for a salt bath quenching furnace that will

(1) **assure rapid and uniform cooling of the work, and**

(2) **provide a fool-proof method of extracting the high-temperature chloride salts carried over from the austenitizing bath.**

★ ★ ★

THE furnace shown in the attached photograph satisfies the first need by providing a vigorous, upward flow of molten salt in headers, into which the hot



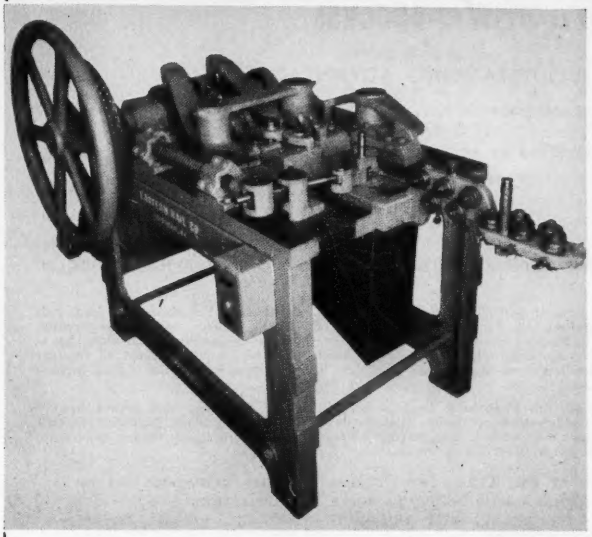
Ajax Quench Furnace * * * *

work is introduced. The salt is circulated by submerged pumps. A separate pump for each header concentrates a great volume of liquid salt into a confined quenching area. Thus it becomes possible to obtain hardness equal to oil quenching together with the usual benefits of martempering and austempering, namely, greatly reduced distortion and the elimination of quench cracks.

★ ★ ★

THE second need of removing the chloride contamination is solved in a unique manner. A separate steel tank is built into one end of the unit. A motor driven pump lifts the salt from the isothermal quench bath to a trough arranged above the separation tank. This trough is cooled constantly by a blast of air which chills the salt to the optimum separating temperature which is al-

PROMPT DELIVERIES ON
"ENCO"
WIRE NAIL MACHINES



Easy To Set Up And Operate.

Furnished belt drive or with motor including V belts, starter, etc.

No. 2 size will cut nails up to 3" long No. 9 gauge and the No. 1 size up to 1¾" long No. 13 gauge.

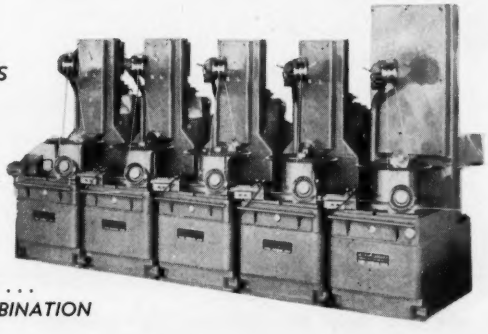
Write for prices, stating size and number of machines wanted.

EASTERN NAIL COMPANY
55 ALEPPO STREET ● PROVIDENCE 9, R. I.

AETNA-STANDARD
WIRE DRAWING UNIT

- DESIGNED FOR COMPLETE VERSATILITY
- BUILT FOR SAFE, EFFICIENT PRODUCTION
- SINGLE OR MULTI-DRAFT OPERATION
- INTERCHANGEABLE UNITS AND PARTS
- AUTO-RHEOSTATIC SYNCHRONIZATION
- WATER COOLED BLOCKS AND DIES

FERROUS OR NON-FERROUS



WET OR DRY LUBRICANTS

SINGLE UNIT ... OR ANY COMBINATION

THE AETNA-STANDARD ENGINEERING CO.
YOUNGSTOWN, OHIO

ASSOCIATED COMPANIES: HEAD, WRIGHTSON & COMPANY, LTD., THORNABY-ON-TEES, ENGLAND
AETNA-STANDARD ENGINEERING COMPANY, LTD. . . . . TORONTO, ONTARIO, CANADA

NEW — AND BETTER

PATENTING
TEMPERING
ANNEALING

The *Trauwood* PROCESS

OUTSTANDING ADVANTAGES

Higher and more uniform physical and fatigue properties.

No surface decarburization or scale.

Faster wire speeds . . . greater production.

Equipment fully automatic and easy to operate.

Control of heating and cooling cycles extremely accurate.

Thermal efficiency of the process very high.

Much finer grained structure possible.

High quenching temperatures rapidly attained.

Adaptable to high alloy and austenitic steel wire and strip (annealing of stainless).

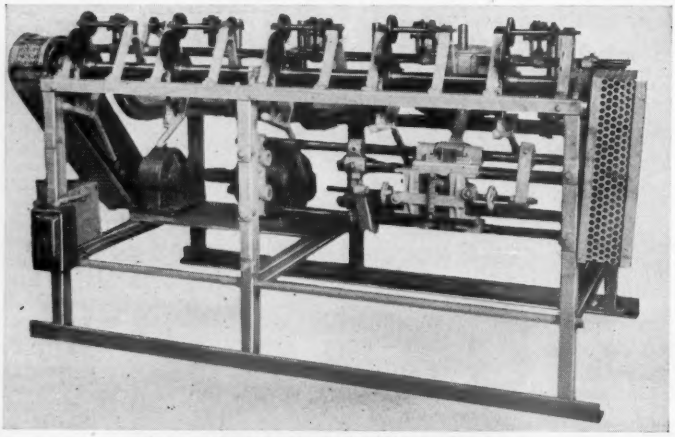
The Trauwood Process, new in principle, eliminates high temperature furnaces and lead pots with their excessive maintenance costs and low thermal efficiencies. More positive temperature control is possible and quenching is done in a RISING temperature—instead of falling, as in conventional heat treating methods. The rapid rate of heating (4 to 5 times as fast as furnace heating) increases production and uniformly produces a finer grained product with higher physical and fatigue values.

Wire and rod patented by the Trauwood Process insures easier drafting and makes heavier reductions possible. In conjunction with the Trauwood patenting equipment, pickling, coating and baking can be made continuous, eliminating expensive handling and delay, materially reducing costs as compared with ordinary methods.

Complete details of the Trauwood Process will be furnished you on request. Our engineers will help you solve your continuous wire and strip patenting, tempering, and annealing problems. Write today.

THE TRAUWOOD ENGINEERING COMPANY

15320 BROOK PARK RD., Box 2719, Westpark Station, CLEVELAND, OHIO
British Representative:
JOHN RIGBY & SONS, LTD., LOW MOOR, BRADFORD—YORKS, ENGLAND



No. 300 MULTIPLE SPINDLE SPOOLER

This machine spools fine wire from .005 to .030 diameter and has a spool flange capacity of 7". Wire tension and traverse adjustments are easily made, and spindles can be started or stopped individually. Any desired lay of wire is easily obtained by a simple change of gears. Non friction bearings used throughout.

All Emory spoolers may be adapted to customer's operating conditions.

On Spooling problems consult

ROBERT J. EMORY COMPANY
31 EAST RUNYON STREET NEWARK 5, NEW JERSEY

ways well below the operating temperature of the quench bath. The chloride contaminant is precipitated out of solution and collected in wire mesh filter baskets, while the purified nitrate salt—still molten—enters the separation chamber. From there it flows back into the isothermal quench bath, so that the whole cleaning process is on a continuous basis.

★ ★ ★

SEVERAL of these new isothermal quench furnaces are now in commercial operation and the results being obtained are giving an added impetus to the adoption of martempering and austempering for many metal products.

★ ★ ★

Wire, Rod and Bar Facilities Expanded at Reynolds Plant

A ONE-THIRD increase in capacity will result from the expansion of **Reynolds Metals Company** wire, rod and bar mill at Listerhill, Alabama. The enlarged mill will soon be in full operation **David P. Reynolds,** vice-president and manager of the general sales division, said in Louisville recently.

★ ★ ★

"THE expansion of these facilities accompanies the transfer of certain equipment formerly located at our Plant 7 in Louisville," Mr. Reynolds said. "This move has enabled us to integrate our operations so that all products of both the merchant mill and structural mill can be produced at one plant site, making for increased production efficiency."

★ ★ ★

THE enlarged facilities which were started in early February of this year will be used for the manufacture of products ranging from small wire up to bar as large as 8 inches in diameter, and structural shapes ranging from ¾-inch by ¾-inch angles up to a 6-inch channel. Facilities for producing a complete range of sizes of screw machine stock, hexagons, squares and rectangular bars have also been set up at the Listerhill plant.

★ ★ ★

Pamphlet on Fume Washers

THE MAURICE A. KNIGHT COMPANY, Akron, Ohio, has issued a four-page pamphlet on fume washers for corrosive fume service. This equipment is used to absorb HC1 fumes, to suppress oil and acid mists, to remove dust from exhaust gases, to remove chlorine fumes, to cool hot acid gases for processing and other similar operations. The company is a manufacturer of acid and alkali-proof equipment—tanks, pipes, connections for pickling, cleaning, plating, etc.

★ ★ ★

COPIES of this booklet may be secured from the company.

★ ★ ★

New Wire Filter Cloth Developed

PRODUCTION of a new metal filter cloth identified as "Michigan Specification 8700" is announced by the **Michigan Wire Cloth Co.** The new cloth is said to combine the advantages of very fine particle retention and favorable flow capacity with strength and corrosion resistant qualities.

★ ★ ★

PRESENT uses for the new cloth include filtering fuel for jet propulsion engines, for diesel injection fuel systems, and chemical process filtering. It is highly suitable for applications where fine straining action combined with free flowing qualities are essential.

★ ★ ★

SPECIFICATION 8700 was developed at the University of Michigan and the Detroit Testing Laboratory, under a 5-year research program sponsored by the Michigan Wire Cloth Co. It is available from current production in monel metal and Chromel "C", and is woven to special order in various alloys, including stainless steel and high nickei alloys.

★ ★ ★

SAMPLES of the new metal filter cloth, along with specification sheets listing its physical characteristics, are available on request. Address inquiries to Michigan Wire Cloth Company, 2100 Howard Street, Detroit 16, Michigan.

If it's twisted folded pressed crushed shaped braided woven paper

TWITCHELL makes it

treated braiding and wrapping yarns

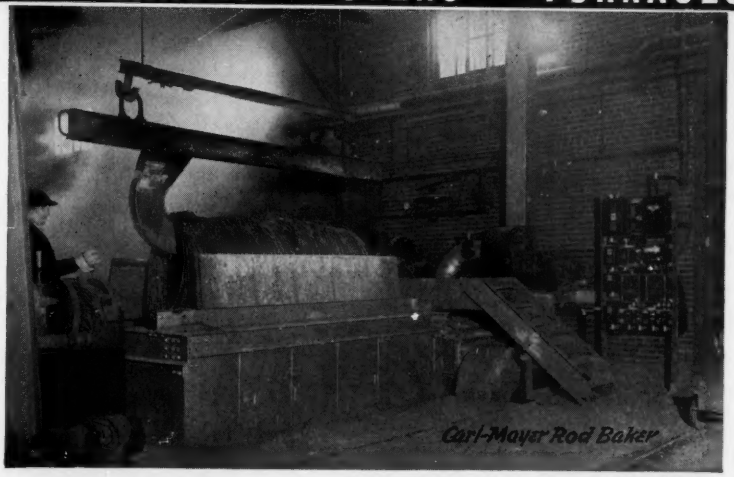
treated wire-rope cores

slit kraft or jumbo rolls for crushing and wrapping operations.

waxed cable-fillers for 2- and 3-wire non-metallic sheathed cable, varnished cambric, and shipboard cable.

E. W. TWITCHELL INC.
Third & Somerset Streets
Philadelphia 33, Pa.

MORE PRODUCTION *with* CARL-MAYER HI-SPEED ROD BAKERS - OVENS - FURNACES



Patented
TYPICAL HI-SPEED ROD BAKER — DIRECT OR INDIRECT HEAT — ANY FUEL
WRITE for BULLETIN No. 241
Growing interest in our type of equipment is evidenced by Carl-Mayer installations for such plants as:—

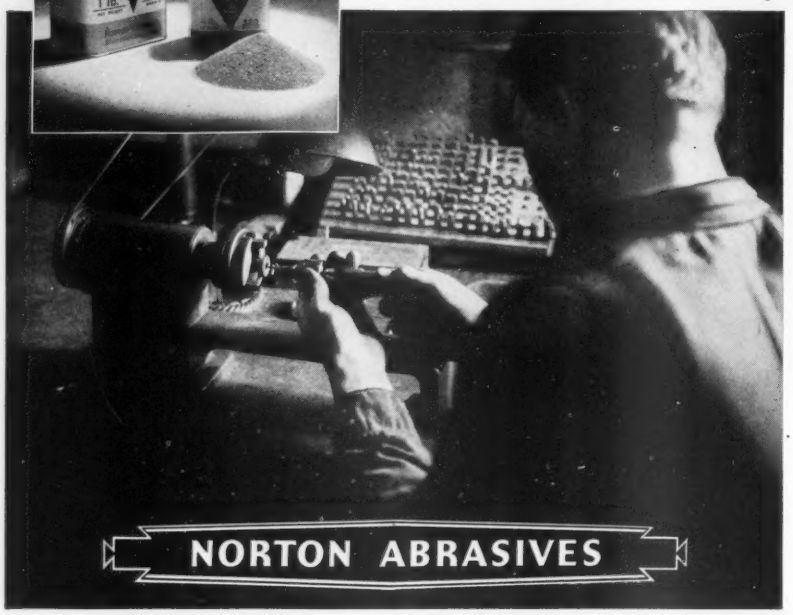
American Steel & Wire Co.
Atlantic Wire Co.
Atlas Steel Co.
Atlas Tack Corp.
California Wire Cloth Corp.
Eaton Mfg. Co.
Frost Steel & Wire Co. Ltd.
Hollup Corp.
Johnson & Nephew Ltd.
Jones & Laughlin Steel Corp.
Pittsburgh Tool Steel Wire Co.
Republic Steel Corp.
Steel Co. of Canada
Wickwire Spencer Steel Div.
Page Steel & Wire Co.

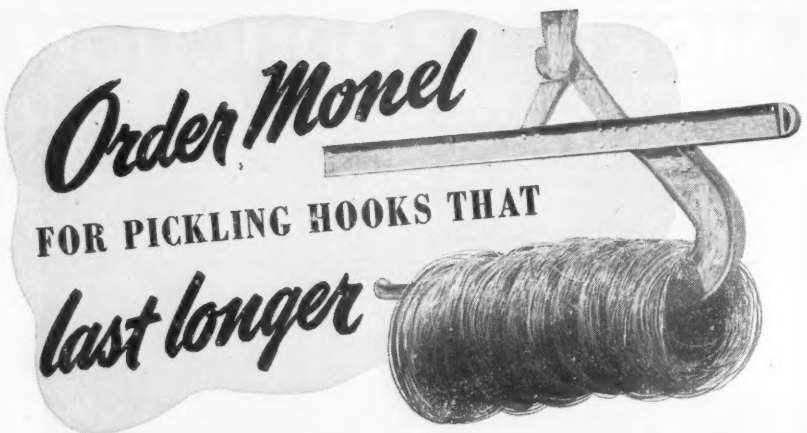
THE CARL-MAYER CORPORATION
3030 EUCLID AVENUE
CLEVELAND, OHIO

NORBIDE Abrasive: Effective, Economical

This abrasive—second only to the diamond in hardness and 150 times less expensive—does an efficient job of cutting and semi-finishing cemented carbide wire drawing dies.

NORTON CO. — Worcester 6, Mass.





Next time you order pickling hooks, make sure you get your money's worth in *service* by specifying MONEL*.

For forty years, users of MONEL pickling equipment have reported many times the service life over the best of other metals tried.

If you want substantial savings in replacement and maintenance costs, switch to MONEL for all types of pickling equipment . . . tanks, baskets, chain, tie-rods, racks.

Write to Inco . . . *today* . . . for full information and sources of supply.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

*Reg. U. S. Pat. Off.

EMBLEM OF SERVICE INCO TRADE MARK

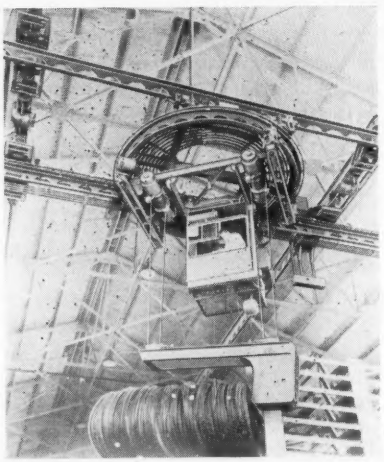
MONEL*... FOR MINIMUM MAINTENANCE

Rotating Carrier Has Five Travel Motions

THE expression "something has been added" frequently heard truly applies to a new revolutionary carrier developed by the **Cleveland Tramrial Division of The Cleveland Crane & Engineering Co.,** Wickliffe, Ohio.

★ ★ ★

THAT additional "something" is a rotating travel motion that



Rotating Carrier of the Cleveland Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, O. ★ ★ ★ ★

enables the carrier to do everything but dance a jig.

★ ★ ★

THE carrier and crane on which it operates has just been put into operation in a large warehouse for the handling of coiled rod and wire. The handling problem here was unusual in that it was necessary to not only pick up coils of rod from incoming railroad cars, but to turn them ninety degrees when placing into the large storage bins. Because of this and the fact that rod is handled by a hairpin-type hook which is tilted either up or down when threading into or drawing away from coils, the following travel motions were required: (1) hoisting, (2) tilting, (3) trolley travel, (4) bridge travel, and (5) rotation.

★ ★ ★

THE Cleveland Tramrail equipment consists of a crane which travels the length of the storage

building, a trolley which travels on the bridge from side to side of the building and a rotating carrier that operates on a circular track built into the trolley. The carrier has two separate hoists, cables from which are reeved to the two ends of the hairpin hook.

★ ★ ★

ALL motions of the equipment are controlled by the operator in the cab attached to the carrier. He can run the unit to any point in the building and turn the carrier clockwise or counter clockwise through short arcs or complete turns, thereby turning the hook to any direction desired. The hook can be raised, lowered, tilted upwards or downwards by separate or simultaneous operation of the hoists. Thus utmost flexibility in the handling of the rod and wire is secured.

★ ★ ★

SPEEDS of this equipment are: bridge 400 FPM, trolley 200 FPM, hoist 50 to 80 FPM, and rotation 75 FPM. Bridge and trolley control are variable five-speed magnetic with dynamic braking. Hoist Control is variable-speed drum type with dynamic lowering. Rotating control is automatic accelerating.

★ ★ ★

THE cab is open-type with landing platform and has glass and grating in floor. A safety switch in cab can stop all motions in case of emergency. A motor-driven horn and flood light are also provided.

★ ★ ★

THIS unit was designed to carry 3500 lbs. of rod in addition to the weight of the hairpin hook. Similar equipment can be furnished for other capacities and operating speeds. Variations of this equipment can also be designed for other materials handling purposes.

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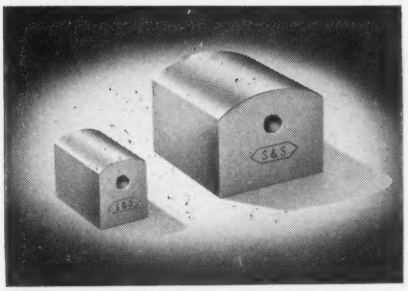
1949 WIRE BUYERS
GUIDE

Sjogren SWAGING HAMMERS



Used by Wire Men Who Want the Best!

SJOGREN Swaging Hammers represent another proven product in the S&S line! Shock resisting, high-grade steel is used to assure you of continuous production. Standard sizes of S & S hammers are available from stock; special sizes are made to order on your specifications. A rugged S&S Swaging Hammer is your guarantee of service.

SJOGREN TOOL AND MACHINE CO., INC.

WIRE PULLERS • WEDGE GRIPS • JAWS FOR ALL MAKES OF PULLERS AND TESTING MACHINES • CAGE ROLLERS • SWAGING HAMMERS • POINTING DIES • WIRE SPOOLERS

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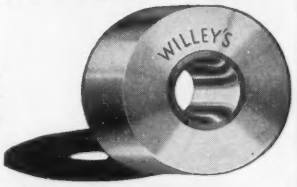
Represented in Canada by THE LARSON CO., 98 Wellington St., West, Toronto, Ont.

WILLEY'S DIES LAST MUCH LONGER

SPECIFY WILLEY'S SIZING, EXTRUSION and WIRE DRAWING DIES

Pioneers in the manufacture of wire forming dies, Willey's is in position to make dies to your specifications that give superior performance, cut production costs and hold tolerances for long runs.



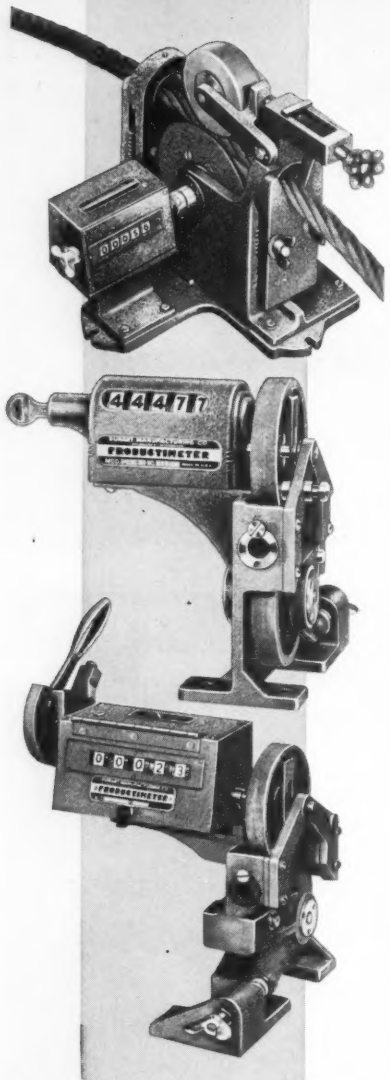
There are standard one-piece round dies, available from stock in many sizes — as well as four classifications from blank and rough cored nibs to finished dies, ready to use.

WRITE FOR NEW CATALOG 449

Full information on all sizes and classifications, as well as hundreds of Willey's Tools for other uses.

WILLEY'S CARBIDE TOOL CO.
SOLE MAKERS OF WILLEY'S METAL
1342 W. Vernor Highway Detroit 1, Michigan

PRODUCTIMETER
WIRE MEASURING MACHINES
Fast . . Accurate . . Dependable . . Legible



Productimeters measure all types of wire from .010 to 3½ inches in diameter . . . at speeds up to 5,000 feet per minute. They eliminate "guess-work". . . insure profitable operation in your plant.

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DURANT MFG. CO.
1918 N. Buffum St. Milwaukee 1, Wis.
118 Orange St. Providence 3, R. I.
Representatives in Principal Cities

PRODUCTIMETERS
SINCE 1879 Speedometers OF INDUSTRY

Tin Research Institute Formed

JOHN IRELAND, Director, **Tin Research Institute**, London England, announces the formation of Tin Research Institute, Incorporated, an American corporation devoted to providing free technical service to consumers of tin in the United States. The office of the new corporation, located at 492 West Sixth Avenue, Columbus 1, Ohio, will in the future, handle all inquiries or requests for technical service, while a sponsorship will be maintained at Battelle Memorial Institute to handle new researches.

★ ★ ★

TECHNICAL experts are available for consultation and practical assistance either at the Tin Research Institute or at the consumers' plants.

★ ★ ★

A WIDE range of publications covering every important use of tin is available free of all charges. Inquiries are invited.

★ ★ ★

ROBERT J. NEKERVIS has been appointed Supervisor of Metallurgical Development and **Robert M. MacIntosh** has been appointed Supervisor of Chemical Development in the new corporation. Both have been associated with Battelle Memorial Institute for the last 8 years, and served as Assistant Supervisors in the Nonferrous Division handling problems related to tin.

★ ★ ★

THE trustees of the new organization are **Clarence D. Laylin, Dean Charles E. MacGuigg,** and **Dr. Bruce W. Gonser**, all of Columbus, Ohio.

★ ★ ★

ECA — The "Law" and the "Profits"

(*Continued from page 677*)

failure. This is not surprising, for in it, history is only repeating itself. The dollar shortage will not end so long as only in the United States there remains an economic society capable of producing exportable surpluses, nor will it

LARGE

...or small

YOU GET POSITIVE CORROSION RESISTANCE ON ALL!

Tanks 10 ft. in diameter, 12 ft. deep—or pipe fittings no larger than your thumb. Every piece of process equipment in your plant can be made *positively* corrosion resistant for longer service life, lower maintenance costs. HAVEG, the strong, lightweight molded material, resists chemical action *through its entire mass.* Not just a lining or coating, its performance is not affected by surface gouges or abrasion.

We're sure HAVEG can help you increase equipment life—so sure that we ask you to try it. Send for samples or install a test piece. Meanwhile, for detailed engineering and application data, write for Bulletin F-5, today.

Available in complete range of sizes to meet all process equipment needs!

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STANNOUS SULPHATE

for IMPROVED LIQUOR FINISHING of STEEL WIRE!

Stannous Sulphate, used for either straw color or white liquor finishing, provides these outstanding advantages:

1. A superior, smoother coating
2. Positive control — making it possible to produce uniform coatings day in and day out
3. Easier to use — fewer operations involved
4. Economy — requires use of less copper sulphate, less acid
5. More Economy — reduces tin losses by eliminating high tin sludging.

Write for information on how to use Stannous Sulphate to best advantage in your liquor finishing.

METAL & THERMIT CORPORATION
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abate as long as unlimited dollars are available to foreign governments "for free." Human nature changes but slowly, and in politics as in business, the time honored rule of "Caveat Emptor" still holds.

★ ★ ★

Pure Speculation or An Educated Guess

THEN what of the future? How far may a humble student venture into the field of speculation? After **E.C.A.**, what? The American people were sold the bill of goods, wrapped up in the package labelled "Economic Cooperation," on the naive theory that it would police up and renovate the unsavory economic and political midden of Western Europe in four years flat. This prize package was to include just about everything and cost approximately 17 billion dollars. We were told that, come a day in 1952, we could pull out of Europe, close the books, come home and go fishing. Oh Yeah!

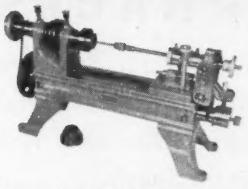
★ ★ ★

A LOT of Americans talked that way, but few of us really believed it. Most of us, if we were honest with ourselves, knew that at its best **E.C.A.** was a temporary measure to buy time against Communist expansion, an uncertain gamble against staggering odds. We knew that 17 billion dollars wouldn't do a complete overhaul job on Western Europe in four years or forty years. Today, we are reluctantly beginning to admit it.

★ ★ ★

JUST the same, the fact remains that we have bought a bill of goods, and for good or ill we're committed to it at least until it expires three years from now. One may ask, when it does expire, must we assume that some substitute measure will have to be devised to take its place? Certainly we cannot turn **E.C.A.** into a glorified **W.P.A.** on a world wide scale. We can give away just so much without going bust ourselves, and people will support adventures in grand scale philanthropy only so long. The answer, therefore, is

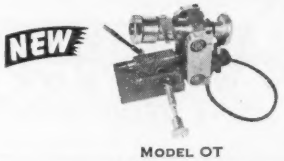
NEW ROOS
DIE ROOM EQUIPMENT
SEMI-AUTOMATIC POLISHER



MODEL OT - PATENT REGISTERED AND APPLIED FOR

Note these outstanding features for greater accuracy in polishing dies and for prolonged machine life!
(a) Quick opening spindle
(b) Pressure adjustor
(c) New cam assembly
(d) New style leather belt

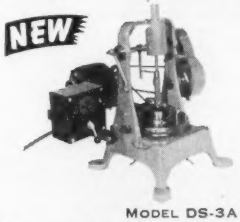
NEW STYLE TAILSTOCK
To Fit Other Model
ROOS Polisher Model OT



MODEL OT

You can quickly and easily replace the tailstock on your old Roos Semi-Automatic Polisher with the New Model OT-Tailstock. Quotation on this new Tailstock furnished on request.

ROOS
AUTOMATIC DIE SHAPING MACHINE



MODEL DS-3A

Offers you three improved features: a die rotating attachment; a time switch; and a reversing switch—which provide these advantages:
1. Die rotating attachment and time switch eliminate the formerly necessary constant attention by operator. Rotation of die is automatic, and machine shuts off automatically at end of time cycle.
2. Reversing switch permits rotation of the die in either direction.

Write today for full information!

ROOS TOOL & MFG. COMPANY
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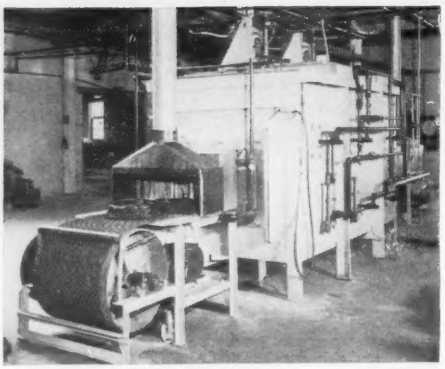
ROCKWELL Belt Conveyor FURNACES

For Continuous, Uniform Annealing, Bright Annealing or Hardening Rod or Wire in Coils or on Spools.



This is one of the many Rockwell batch and continuous belt or strand types—fuel fired or electric—for any gauge or quantity of wire of any metal.

Scale-free annealing of non-ferrous coiled rod in an open gas-fired, belt conveyor furnace. Also used for bright annealing certain metals.

Bulletin 418 describes various types of Rockwell furnaces for wire heating. Write for a copy.

ROCKWELL ALSO BUILDS — *Coil winding machines, reels and spools; pickling, brushing, cleaning, washing, finishing, drying and handling equipment; ovens and dryers; special fabrications; non-ferrous rod mills.*

ROCKWELL SINCE 1888 BUILT

FURNACES · OVENS · SPECIAL MACHINERY

W. S. ROCKWELL COMPANY

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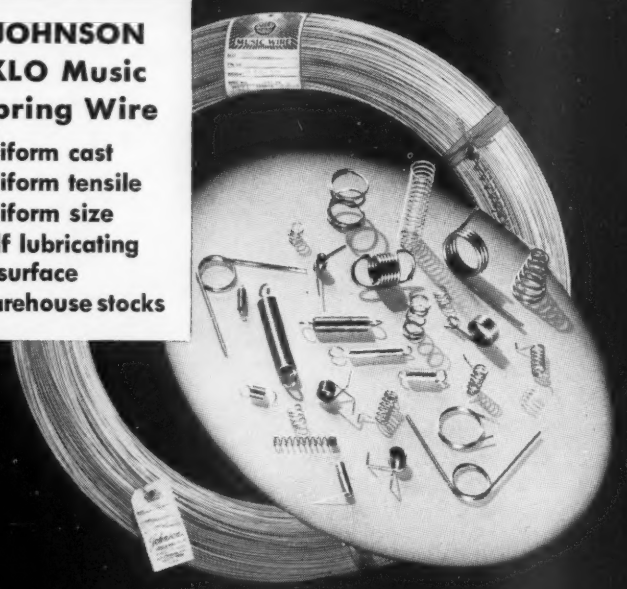
In Canada: Francis Hankin & Co., Ltd. Montreal & Toronto

JOHNSON XLO Music Spring Wire

Uniform cast
Uniform tensile
Uniform size
Self lubricating surface
Warehouse stocks



JOHNSON

STEEL AND WIRE COMPANY, INC.

WORCESTER 1, MASS.

New York Philadelphia Cleveland Detroit Akron Chicago
Atlanta Houston Tulsa Los Angeles Toronto

"Yes." Three years from now, when **E.C.A.** expires, something will have to take its place. Nature abhors a vacuum. And it seems to me that right now is the time to be thinking, yes, and talking about what that substitute shall be.

★ ★ ★

I BELIEVE that as of right now we should begin to tell the world that **E.C.A.** is **not** a permanent institution and that we believe long range economic reconstruction is a job for private capital and must be underwritten on a sound business basis. We must tell our beneficiaries that in three years or less we propose to transfer the job of world economic recovery from the American taxpayers into the hands of private entrepreneurs who we believe can run it as a mutually profitable business venture.

★ ★ ★

THE things that human beings need, and want, and would acquire if they could, are practically unlimited, and until these needs and desires are in a measure satisfied, the world need for development and industrialization has no visible limit. We Americans would stand to benefit if **more** of the world were **more** industrialized. We are a "make and sell" nation, and next to ourselves, we have always found our best customers in other "make and sell" nations.

★ ★ ★

BUT this proposal to substitute private capital for government aid is a lot easier to say than to put into practice. We must recognize at once the fact that for some years past American capital has not ventured abroad in any substantial amount. This reluctance to invest "risk" capital in foreign enterprises stems from three main causes: the fear of foreign politics and ideologies, the fear of governmental restrictions and controls on management, and the fear that earnings will not be convertible into United States dollars. In short, American investment abroad is held back by the triple threat of confiscation, state control, and currency manipulation—all serious, but all, I firmly believe, soluble.

★ ★ ★

BUT these are not the only obstacles to the transfer of the job of **E.C.A.** to private hands. The real sixty-four dollar question is, how long can a free enterprise economy continue to invest in a world headed for State Socialism at an apparently accelerating rate? I doubt if anyone knows the answer to that one, but this much we do know—American free enterprise cannot isolate itself, and it cannot stand still. Communism, militant, ruthless, totally evil, is not standing still.

★ ★ ★

AGAIN we ask, after **E.C.A.**, what? What are the alternatives? First, we can extend **E.C.A.** and tax and spend our people into bankruptcy and our government into some form of authoritarian statism. Second, we can pull out of Europe, tie our strategy and economy to the Western Hemisphere and let Communism take over—if it can. Third, given time enough, we might work out a program along the lines suggested above, transfer the long range recovery job to private capital and try to educate the world to the fact an honest profit is better than a dole and that the price of guaranteed security is slavery. Finally, there remains a last alternative which no one can contemplate without horror—Preventative War—the end of the world as we know it. May God grant that it shall not come to pass.

★ ★ ★

Getting Down to Getting Business

(*Continued from page 672*)

"WE assume of course that all manufacturers do not want to nor should they be urged to, become exporters, even if that is the only way they can participate in the ECA program. If he is willing and able to export we will leave no stone unturned to help him."

★ ★ ★

TO this White added the remarks quoted at the head of this article—his statement to the Congressional committee that despite all the help that can be given, the

WIRE MILLS—IN COUNTRIES
OPERATING UNDER THE
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are invited to send
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DIAMOND WIRE DRAWING
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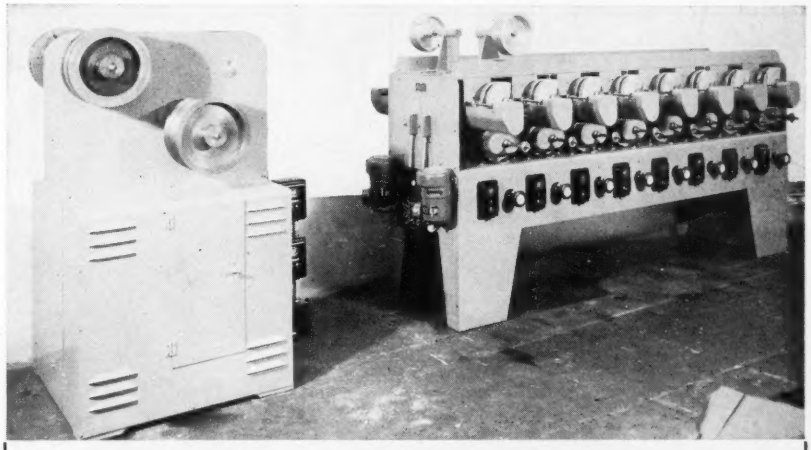

16 WIRE TORQUE MOTOR PULL-OUT No. 966

Compact take-up and capstan unit for 16 lines of wire, each line having separate rheostatically controlled torque motor with gearhead.

Traverse motion individual for each wire and adjustable for width of reel and rate per turn. Divided capstans permit a different speed for each 4 wires.

Also available with modifications to suit individual operating requirements. State details of application.

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"American" INSULATING MACHINERY COMPANY
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WE BUY WE SELL

We Pay Highest Prices for Used Machinery

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3 Farrell Intermediate String-up Machines
1200—24"x10" Mossberg Steel Reels $1.25 Ea.
1000—8" x 6" Mossberg Steel Reels $1.00 Ea.
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All Types of Insulated Wire Machinery in Stock

All Machines Reconditioned in Our Own Shop

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SPECIALIZED WIRE for WIRE FABRICATORS

Whatever your wire fabrication problem, there is a Cortland Brand specialized low carbon wire to help you make a better product with fewer production stops and rejects. Made with best corrosion-resisting steel from Wickwire's own mills—

All Finishes: Plain, galvanized, coppered or tinned.
All Sizes: Coils, spools, or straightened cut to length.
All Types: Stone wire, bookbinder, flat wire, etc.

Cortland BRAND
WICKWIRE BROTHERS, INC. CORTLAND, N. Y.

WIRE STRAIGHTENING AND CUTTING

We have open capacity on our rotary wire straightening and cutting machines in our Jersey City and Baltimore warehouses and solicit inquiries for quotations on straightening and cutting wire or wire rod in diameters from 1/8" to 3/4" inclusive and in lengths from 2 to 33 feet. Material accurately prepared, bundled, tagged and shipped in accordance with customer's instructions.

Bending, threading, and welding facilities also available when required.

WE ALSO OFFER FOR SALE AT SPECIAL PRICES APPROXIMATELY 500 TONS PLAIN ROUND BARS

structural, intermediate and hard grades in sizes 7/32", 5/16", 7/16" and 9/16", in lengths of 20 feet and 30 feet. Submit specifications for quotation.

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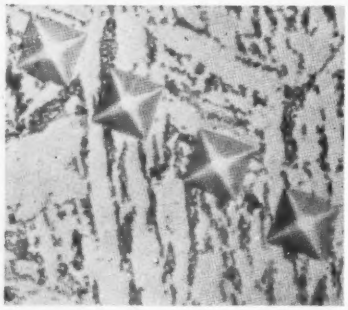
COMPLETE LINE OF STEEL FOR CONCRETE



MICRO HARDNESS

Above impressions made by Eberbach Micro Hardness Tester in tool steel. Photographed at 1000X. Determines hardness of very fine wire. *Write for Bulletin MHT.*

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ESTABLISHED 1842

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individual manufacturer must dig for his own business in a competitive world.

* * *

ON behalf of Mr. White, **Lee Schooler** of the ECA staff gave WIRE AND WIRE PRODUCTS a preview of some of the advice the division will give smaller manufacturers. When contemplating going into the export business an individual manufacturer should, he said, weigh carefully the question of how it would affect his business. Would the lags in his present production afford enough materials for export to make the venture worth while?

* * *

"IF he decides it would," Schooler said, "then he should consider two questions very carefully. Should he go into the export field merely during the boom of ECA or should he plan to go into it to stay."

* * *

"THIS decision may vitally affect his immediate actions. For in considering his many new problems the new exporter must decide whether to conduct his own foreign relations or to hand that part of the business over to an agent."

* * *

"THERE are many capable agents who specialize in export business. In conducting the business, they use the letterheads of the manufacturer and in general it appears that he is doing the business himself. But the agent has contacts over the whole world, knows the ropes about licenses and foreign regulations, understands the requirements for packing and labeling."

* * *

"IF the manufacturer merely wants to take advantage of the Marshall Plan business for the period of its duration it might be wise to get such an agent."

* * *

"ON the other hand, if he plans to stay in the foreign field it may be that he would plunge in all at once and establish

his own contacts and know how."

★ ★ ★

"BUT above all," Schooler concluded, "if the manufacturer decides to venture into the export field he should not overlook two facts; first, that there are many rich pockets of business all over the world outside ECA territory and second, that there are many possibilities for dollar sales in Western Europe outside the Marshall Plan."

★ ★ ★

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* * *

Trade Lists Available

Lists of the following classifications covering firms in most foreign areas are available in the Commercial Intelligence Branch, OIT, Department of Commerce, Washington 25, D. C., for $1 each per country. Numerous other classifications designed for specific uses are also available. Symbols below represent: A—Agents; D—Distributors or Dealers; E—Exporters; G—Growers; I—Importers; M—Manufacturers; P—Producers; R—Refiners. Copies of lists may be purchased from field offices of the Department of Commerce. Inquiries should be directed to these offices whenever possible.

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HOWSAM SPOOL COMPANY

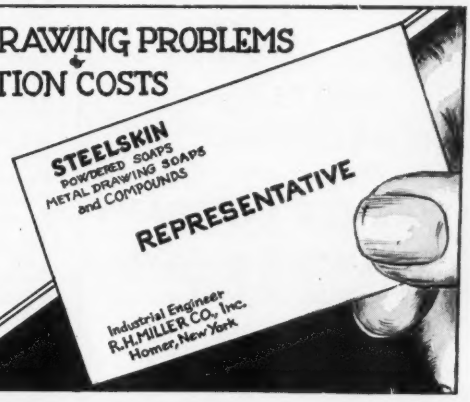
500 RATHBONE AVE.

AURORA ILLINOIS

Solve Reduce WIRE DRAWING PROBLEMS PRODUCTION COSTS

YOUR INQUIRY WILL BRING YOU FULL INFORMATION ON SOAPS AND COMPOUNDS TO SOLVE YOUR WIRE DRAWING PROBLEMS

R.H.MILLER CO., INC.
HOMER, NEW YORK
ESTABLISHED 1909



REELS SPOOLS

ALL SIZES

WOOD- PLYWOOD -WOOD-METAL

RETURNABLE NON-RETURNABLE

Samples and Prices on Request

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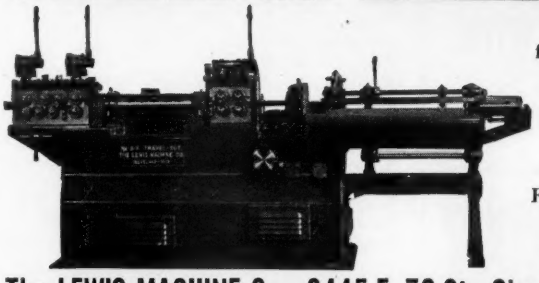
LEWIS TRAVEL-CUT WIRE STRAIGHTENING and CUTTING Machines



Machines for 1/16" to 3/4" rod
Round
Square
Flat
Hexagon
Ferrous and Non-Ferrous

Automatic
High Speed
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LEWIS

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WIRE DRAWING

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Canada's Wire Business

THE Dominion Bureau of Statistics has issued figures on Canada's 1947 wire production, showing that the factory sales volume of wire and wire goods in 1947 totaled $54,564,000 which is an increase over 1946 of 33%.

★ ★ ★

THERE are 97 plants in Canada producing these items with an average of 6700 employees, as against 6100 for the preceding year, 1946.

★ ★ ★

Fluxes for Hot Dip Galvanizing and Tinning

THE HANSON-VAN WINKLE-MUNNING COMPANY of Matawan, New Jersey, has issued a new Bulletin, F-100, entitled "Why and How to Use H-VW-M Fluxes for Hot Dip Galvanizing and Hot Tinning."

★ ★ ★

THIS is an unusual publication. It is a technical Instruction Manual in every sense of the word. It reviews the techniques involved, describing and illustrating the pre-galvanizing cycle, giving a work flow sheet, operation by operation, for hot galvanizing from the first alkali cleaner, through pickling, rinses, fluxing and galvanizing.

★ ★ ★

IN hot tinning, the Bulletin describes the pre-tinning cycle and the use of Fas-Tin fluxes as a wash or a flux blanket.

★ ★ ★

THE operator of a hot tinning or galvanizing plant will find this Bulletin of great technical assistance in his operations.

★ ★ ★

Owens-Corning Fiberglas Holds Third Annual Wire and Cable Conference

HOW to help lower wire and cable manufacturing, installation and maintenance costs by capitalizing on recent technical advancements in glass-base insulating materials, was the theme of

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the Third Annual Wire and Cable Conference sponsored by the Textile Products Division of the **Owens-Corning Fiberglas Corporation.**

★ ★ ★

MORE than 60 representatives from 40 leading wire and cable manufacturers attended the Conference held June 2 and 3 at the Bedford Springs Hotel, Bedford, Pa.

★ ★ ★

HAROLD BOESCHENSTEIN, President of Owens-Corning Fiberglas Corporation, in the opening address, keynoted the purpose of the Conference by stressing the importance of product improvement in meeting the challenge of

Fred Sampson, Jr., Manager of Electrical Sales for Owens-Corning Fiberglas Corporation, addresses the first technical session of the Third Annual Wire and Cable Conference at Bedford, Pa.

the competitive market of today, and tomorrow.

★ ★ ★

ROY J. BLACK, Manager of Industrial Textile Sales, then reviewed the number and the diversity of applications of glass yarns in wire and cable products today. He enumerated more than 50 current applications in contrast to the single initial application which launched glass-base insulations 13 years ago, namely, the application to magnet wire insulation.

★ ★ ★

THE technical program for the Conference was prepared by **Fred Sampson, Jr.**, Manager of Electrical Sales, who was assisted by **Harry Collis,** Electrical Engineer, and **R. J. Lasko,** Program Chairman. Mr. Sampson also addressed the technical sessions on building wire and cable, tension members and dyed yarn.

★ ★ ★

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HIGHLIGHT of the first day's program was a series of demonstrations of the basic properties of glass yarns which improve the performance of finished wire and cable—small space factor, high tensile strength, excellent resistance to heat, flame, moisture, and rotting agents, and high thermal conductivity. Most commented upon of these demonstrations was the uncovering of various types of barn cable and building wire buried for months in barnyard rotting agents. The demonstrations were conducted by Harry Collis and C. L. Meteer of the Owens-Corning Fiberglas Corporation's Electrical Testing Laboratory at Ashton, Rhode Island.

★ ★ ★

OTHER speakers on technical subjects were: **E. S. Adams**—on glass-base tapes for wires and cables; **Paul Layton**—on the program for improved magnet wire production; and **Lawrence Deardurff**—on the impregnation of coating materials combined with glass materials.

★ ★ ★

R. J. **LASKO** summarized the function of Owens-Corning Fiberglas Corporation's advertising as being that of "supplying useful product and technical development news."

★ ★ ★

AT the dinner climaxing the first day's activities, **Games Slayter,** Vice President and Director of Research and Development, spoke about the latest applications of glass fibers to improve today's products, and the first applications likely to be perfected to improve tomorrow's products.

★ ★ ★

THE Conference was brought to a close with a talk by **J. H. Thomas,** Vice President and General Manager of the Textile Products Division. Mr. Thomas noted the benefits to be derived through the cooperative effort of wire and cable manufacturers and suppliers, and credited many of the technical advancements reported at the Conference to just such cooperation.

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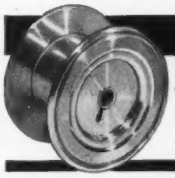
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Wean Equipment Corp., Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

CLOTH TESTERS—
Scott Testers, Inc., Providence, R. I.

CLOTH—WIRE, All Metals
Roebling's, John A. Sons, Co., Trenton, N. J.
Wickwire Spencer Steel Division, Colorado Fuel & Iron Corp., Buffalo, N. Y.

COATING COMPOUNDS—
Apex Alkali Products Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Miller, R. H., Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

COILERS—Sheet, Strip and Wire
Entwistle, Jas. L. Co., Pawtucket, R. I.
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J. Machine Co., Newark, N. J.
Torrington Mfg. Co., Torrington, Conn.
Wean Equipment Corp., Cleveland, Ohio.

COLD HEADERS—
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

COMPOUNDS—Coppering
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Diamond
Hyprez Division, Engis Equipment Co., Chicago, Ill.
Magnus Chemical Co., Garwood, N. J.

COMPOUNDS—Metal Finishing
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Metal & Thermit Corp., New York, N. Y.

COMPOUNDS—Rust Preventing
American Chemical Paint Co., Ambler, Pa.
American Lanolin Corp., Lawrence, Mass.
Apex Alkali Products Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Oakite Products, Inc., New York, N. Y.

COMPOUNDS—Rust Removing
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

COMPOUNDS—Wire Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Bick, Hans C., Inc., Reading, Pa.
Magnus Chemical Co., Garwood, N. J.
Magnuson Products Corporation, Brooklyn, N. Y.
Miller, R. H. Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Pacific Coast Borax Corp., New York, N. Y.
Potter, Neil C., Newark, N. J.
Standard Industrial Compounds Co., Inc., Chicago, Ill.
Swift & Company, Chicago, Ill.

COPHOLDERS—Steel
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

CORROSION PREVENTIVES
Angier Corp., The, Framingham, Mass.

CRANES—Wire Mill
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CUTTING TOOLS—Carbide
Adamos, Carbide Corporation, Harrison, N. J.
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Metal Carbides Corporation, Youngstown, Ohio.
Rusch Wire Die Corp., Croton-on-the-Hudson, New York.
Vascoloy-Ramet Corp., North Chicago, Ill.
Willey's Carbide Tool Co., Detroit, Mich.

CUTTING TOOLS—Wire
Adamos, Carbide Corporation, Harrison, N. J.
Porter, H. K., Inc., Everett, Mass.

DIAMONDS—Industrial
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Champion Diamond Co., New York, N. Y.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vianney Wire Die Wks., New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND POWDERS—
Champion Diamond Co., New York, N. Y.
Eastern Carbide Corp., New Rochelle, N. Y.
Hoosier Wire Die, Inc., Ft. Wayne, Ind.
Hyprez Division, Engis Equipment Co., Chicago, Ill.
Indiana Wire Die Co., Ft. Wayne, Ind.
New England Wire Die Co., Worcester, Mass.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND TOOLS—
Carboloy Co., Inc., Detroit, Mich.
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIES—Carbide
(See Dies—Tungsten Carbide)

DIES—Cold Heading
Adamos, Carbide Corporation, Harrison, N. J.
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio.
Vascoloy-Ramet Corp., No. Chicago, Ill.

DIES—Diamond
Ajax Industrial Supplies, Inc., Fort Wayne, Ind.
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Cochaud Wire Die Corp., New York, N. Y.
Ft. Wayne Wire Die, Inc., Fort Wayne, Ind.
Hoosier Wire Die, Inc., Ft. Wayne, Ind.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
New England Wire Die Co., Worcester, Mass.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vianney Wire Die Wks., New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIES—Extrusion
Adamos, Carbide Corporation, Harrison, N. J.
Carboloy Co., Inc., Detroit, Mich.
Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
Metal Carbides Corporation, Youngstown, Ohio.
Robertson, John, Co., Brooklyn, N. Y.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Eyelet
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.

DIES—Pointing
Sjogren Tool and Machine Co., Auburn, Mass.

DIES—Repairs & Re-Cutting
Adamos, Carbide Corporation, Harrison, N. J.
Ajax Industrial Supplies, Inc., Fort Wayne, Ind.
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Detroit, Mich.
Cochaud Wire Die Corp., New York, N. Y.
Ft. Wayne Wire Die, Inc., Fort Wayne, Ind.
Hoosier Wire Die, Inc., Ft. Wayne, Ind.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
New England Wire Die Co., Worcester, Mass.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Wks., New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Special Shapes, Etc.
Adamos, Carbide Corporation, Harrison, N. J.
Eastern Carbide Corp., New Rochelle, N. Y.
Hoosier Wire Die, Inc., Ft. Wayne, Ind.
Indiana Wire Die Co., Fort Wayne, Ind.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.

WHERE TO BUY, Continued

DIES—Tantalum Carbide
Adamos, Carbide Corporation, Harrison, N. J.
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, Ohio.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Wks., New York, N. Y.

DIES—Tube Drawing
Adamos, Carbide Corporation, Harrison, N. J.
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Wks., New York, N. Y.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Tungsten Carbide
Adamos, Carbide Corporation, Harrison, N. J.
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
Hoosier Wire Die, Inc., Ft. Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, Ohio.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Wks., New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.
Willey's Carbide Tool Co., Detroit, Mich.

DRAW BENCHES—
(See MACHINERY—Draw Benches)

DRUMS—Flange Steel
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.

DRUMS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.
Watson Machine Co., The, Paterson, N. J.

DRYING EQUIPMENT—
Carl-Mayer Corp., The, Cleveland, Ohio.
Industrial Ovens, Inc., Cleveland, Ohio.
Rockwell, W. S. Co., Fairfield, Conn.
Ross, J. O., Engineering Corp., New York, N. Y.

ENGINEERS—Consulting Hot Galvanizing
Wallace G. Imhoff Co., The, Los Angeles, Calif.

ENGINEERS—Consulting Spring Design
Carlson, Co., The, New York, N.Y.

ENGINEERS—Consulting Wire Mill
Fisher, Edward J. P., North Jackson, Ohio.
Lewis, Kenneth B., Worcester, Mass.

EQUIPMENT—Insulation Testing
Davis, R. L., Elec. Co., Wallingford, Conn.
Entwistle, James L., Co., Pawtucket, R. I.

EYELETS—Brass or Zinc
Platt Bros. & Co., The, Waterbury, Conn.

FLUXES—Soldering
American Chemical Paint Co., Ambler, Pa.

FOAM PRODUCING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.
Parkin, Wm. M. Co., Pittsburgh, Pa.

FRICTION PAY-OFF STANDS—
Industrial Ovens, Inc., Cleveland, Ohio.

FURNACES—Annealing
Ajax Electric Co., Inc., Philadelphia, Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Electric Furnace Co., Salem, Ohio.
Harper Electric Furnace Corp., Niagara Falls, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engr. Co., Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Automatic
Carl-Mayer Corp., The, Cleveland, Ohio
Electric Furnace Co., Salem, Ohio.
Surface Combustion Corp., Toledo, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Brazing
Electric Furnace Co., Salem, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.

FURNACES—Bright Annealing
Electric Furnace Co., Salem, Ohio.
Harper Electric Furnace Corp., Niagara Falls, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Electric
Eisler Engineering Co., Newark, N. J.
Electric Furnace Co., Salem, Ohio.
Harper Electric Furnace Corp., Niagara Falls, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., The, Cleveland, Ohio.

FURNACES—Galvanizing Equipment
Ajax Electric Co., Inc., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., The, Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Hard'ing & Temp'ing
Ajax Electric Co. Inc., Philadelphia, Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Electric Furnace Co., Salem, Ohio.
Harper Electric Furnace Corp., Niagara Falls, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engr. Co., The, Cleveland, Ohio.

FURNACES—Lead Melting
Electric Furnace Co., Salem, Ohio.
Robertson, John, Co., Brooklyn, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Non-Oxidizing
Ajax Electric Co., Inc., Philadelphia, Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, Ohio.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Normalizing
Ajax Electric Co., Inc., Philadelphia, Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Electric Furnace Co., Salem, Ohio.
Harper Electric Furnace Corp., Niagara Falls, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Pot (Oil, Gas, Electric)
Ajax Electric Co., Inc., Philadelphia, Pa.

FURNACES—Resistance Heating, Strand
Trauwood Engineering Co., Cleveland, Ohio.

FURNACES—Salt Bath
Ajax Electric Co., Inc., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corporation, Toledo, O.
Trauwood Engineering Co., The, Cleveland, Ohio.

FURNACES—Wire, Strip & Sheet
Carl-Mayer Corp., The, Cleveland, Ohio.
Eisler Engineering Co., Newark, N. J.
Electric Furnace Co., Salem, Ohio.
Harper Electric Furnace Corp., Niagara Falls, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corporation, Toledo, O.
Trauwood Engineering Co., The, Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

GALVANIZING EQUIPMENT—
Steel Equipment Co., Cleveland, Ohio.
Wean Equipment Corp., Cleveland, Ohio.

GALVANIZING KETTLES—
National Annealing Box Co., Washington, Penna.

GRINDERS—Roll
Norton Co., The, Worcester, Mass.

HAMMERS—Swaging
Sjogren Tool and Machine Co., Auburn, Mass.

HOISTS—Electric Travelling
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, Ohio.

HOOKS—Pickling and Liming
Gordon, Clark E., Detroit, Mich.
Youngstown Welding & Engineering Co., Youngstown, Ohio.

INHIBITORS—Pickling
American Chemical Paint Co., Ambler, Pa.
Oakite Products, Inc., New York, N. Y.
Parkin, Wm. M., Co., Pittsburgh, Pa.

INSULATING LACQUERING SYSTEMS—Continuous
American Insulating Machine Co., Phila., Pa.
Industrial Ovens, Inc., Cleveland, Ohio.

INSULATING MATERIALS—
Du Pont de Nemours, E. I., Co., Wilmington, Del.
Martin, Glenn L., Company, Baltimore, Md.
Owens Corning Fiberglas Corp., Toledo, O.
Twitchell, E. W., Philadelphia, Pa.

LATHES—Die Reaming
Carboloy Co., Inc., Detroit, Mich.
Morgan Construction Co., Worcester, Mass.
Roos, Tool & Mfg. Co., Montclair, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Machine Co. Waterbury, Conn.

LIME—
Warner Co., Philadelphia and Bellefonte, Pa.

LININGS—Acid and Alkali Proof
Haveg Corp., Newark, Del.
Sauereisen Cements Co., Pittsburgh, Pa.

LUBRICANTS—For Metal Cutting, Stamping and Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Miller, R. H., Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

LUBRICANTS—Wire Drawing
(See Compounds—Wire Drawing)

LUMBER—Wire Mill, for lagging and car blocking.
North Anson Reel Co., North Anson, Maine

MACHINERY—Armoring (Cable, Wire Hose)
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Bead Wrapping
Terkelsen Machine Co., Boston, Mass.

MACHINERY—Braiding
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Wire & Textile Mach'y, Inc., Pawtucket, R. I.

MACHINERY—Brazing
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Bunching
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Bundling, Scrap
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Cable, Electric
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Chain Making
Nilson, A. H. Machine Co., The, Bridgeport, Conn.

MACHINERY—Cable, Rope Closing
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Coil Winding
Boyd & Sons Manufacturing Co., Phila., Pa.
Rockwell, W. S., Co., Fairfield, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.

WHERE TO BUY, Continued

MACHINERY—Coilers
Boyd & Sons Manufacturing Co., Phila., Pa.
Eisler Engineering Co., Newark, N. J.
Entwistle, Jas. L. Co., Pawtucket, R. I.
Morgan Construction Co., Worcester, Mass.
National Machinery Exchange (used), New York, N. Y.
New England Butt Co., Providence, R. I.
Ruesch, H. J. Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.
Watson Machine Co., Paterson, N. J.
Wean Equipment Corp., Cleveland, Ohio.
Wire & Textile Machinery, Inc., Pawtucket, R. I.

MACHINERY—Copper Wire Drawing and Rolling
Aetna-Standard Engineering Co., Youngstown, Ohio.
American Insulating Mach'y Co., Phila., Pa.
National Machinery Exchange (used), New York, N. Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Covering Wire
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Royle, John & Sons, Paterson, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Cutting
Eisler Engineering Co., Newark, N. J.
Lewis Machine Co., The, Cleveland, Ohio.
Mettler Machine Tool, Inc., New Haven, Conn.
National Mach'y Exch. (Used) New York, N. Y.
Nilson Machine Co., A. H., Bridgeport, Conn.
Porter, H. K., Inc., Everett, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Die Making
Carboloy Co., Inc., Detroit, Mich.
Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Roos, Tool & Mfg. Co., Montclair, N. J.
Wayne Wire Die Co., Hillside, N. J.

MACHINERY—Draw Benches
Aetna-Standard Engineering Co., Youngstown, Ohio.
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J., Machine Co., Newark, N. J.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Edging
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.
Industrial Ovens, Inc., Cleveland, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Extruding
National Erie Co., Erie, Pa.
Robertson, John, Co., Brooklyn, N. Y.
Royle, John, & Sons, Paterson, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Fence
Blashill, Arthur, Woodstock, Ont., Canada.
Glader, Wm., Machine Works, Chicago, Ill.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Filament Coil Winding
Eisler Engineering Co., Newark, N. J.

MACHINERY—Flat Wire
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Galvanizing
(See Galvanizing Equipment)

MACHINERY—Galvanizing Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

MACHINERY—Gang Winders
Entwistle, Jas. L. Co., Pawtucket, R. I.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Grinding
Norton Co., The, Worcester, Mass.

MACHINERY—Insulating
American Insulating Mach'y Co., Phila., Pa.
National Erie Co., Erie, Pa.
New England Butt Co., Providence, R. I.
Royle, John & Sons, Paterson, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lead Encasing Presses, etc.
Robertson, John Co., Brooklyn, N. Y.

MACHINERY—Lead Stripping
Robertson, John Co., Brooklyn, N. Y.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Looms, Wire Weaving
Bruckner-Mitchell, Inc., New York, N. Y.

MACHINERY—Magnet Wire
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Material Handling
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, O.

MACHINERY—Measuring Wire & Cable
Durant Mfg. Co., Milwaukee, Wis.
Entwistle, Jas. L. Co., Pawtucket, R.I.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Nail and Tack
Eastern Nail Co., Providence, R. I.
Glader, Wm., Machine Works, Chicago, Ill.
National Mach'y Exch. (Used), New York, N.Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Panning
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Perth Amboy, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I

MACHINERY—Pickling
Gordon, Clark E., Detroit, Mich.
Youngstown Welding & Engineering Company, Youngstown, Ohio.

MACHINERY—Pointing
Aetna-Standard Engineering Co., Youngstown, Ohio.
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Fdry & Mach. Co., Trenton, N.J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Rod Mill
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J., Machine Co., Newark, N. J.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Rolling Mill
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Rubber Insulating
Royle, John & Sons, Paterson, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Rubber Tubing and Straining
New England Butt Co., Providence, R. I.
Royle, John & Sons, Paterson, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Screw Wire
National Mach'y Exch. (Used), New York, N.Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Special
American Insulating Mach'y Co., Phila, Pa.
Bruckner-Mitchell, Inc., New York, N. Y.
Davis, R. L. Electric Co., Wallingford, Conn.
Eastern Nail Co., Providence, R. I.
Emory, Robert J., Co., Newark, N. J.
Entwistle, Jas. L. Co., Pawtucket, R. I.
New England Butt Co., Providence, R. I.
Ruesch, H. J. Machine Co., Newark, N. J.
Scudder, E. J., Fdry & Mach. Co., Trenton, N.J.
Sjogren Tool and Machine Co., Auburn, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Spooling
American Insulating Mach'y Co., Phila., Pa.
Boyd & Sons Manufacturing Co., Phila., Pa.
Davis, R. L. Electric Co., Wallingford, Conn.
Eisler Engineering Co., Newark, N. J.
Emory, Robert J., Co., Newark, N. J.
Entwistle, Jas. L. Co., Pawtucket, R. I.
National Mach'y Exch. (Used), New York, N.Y.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury, Conn.
Watson Machine Co., Paterson, N. J.
Wean Equipment Corp., Cleveland, Ohio.
Wire & Textile Mach'y, Inc., Pawtucket, R. I.

MACHINERY—Spring Making
National Mach'y Exch. (Used), New York, N.Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Staple
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Straightening
Lewis Machine Co., The, Cleveland, Ohio.
Mettler Machine Tool Co., New Haven, Conn.
National Mach'y Exch. (Used), New York, N.Y.
Nilson, A. H. Machine Co., Bridgeport, Conn.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Stranding
Hughesville Machine & Tool Co., Hughesville, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Strip Steel
Aetna-Standard Engineering Co., Youngstown, Ohio.
Ruesch, H. J., Machine Co., Newark, N. J.
Steel Equipment Co., Cleveland, Ohio.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Swaging
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Waterbury-Farrel Foundry & Machine Co. Waterbury, Conn.

MACHINERY—Taping
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Testing Physical
Dillon, W. C. & Co., Inc., Chicago, Ill.
Eberbach & Son Co., Ann Arbor, Mich.
Scott Testers, Inc., Providence, R. I.

MACHINERY—Testing Equipment—Sparkers
Davis, R. L. Elec. Co., Wallingford, Conn.
Entwistle, Jas. L., Pawtucket, R. I.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Tinning Wire
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Steel Equipment Co., Cleveland, Ohio.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Tinsel Rolling Mills
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Trolley Wire
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube Mill
Ruesch, H. J., Machine Co., Newark, N. J.

MACHINERY—Welding Wire
Eisler Engineering Co., Newark, N. J.
Micro Products Co., Chicago, Ill.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Winding
American Insulating Mach'y Co., Phila., Pa.
Davis, R. L. Electric Co., Wallingford, Conn.
Eisler Engineering Co., Newark, N. J.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

WHERE TO BUY, Continued

MACHINERY—Wind-up (Constant Tension, Variable Speed)
Aetna-Standard Engineering Co., Youngstown, Ohio.
Davis, R. L. Electric Co., Wallingford, Conn.
Industrial Ovens, Inc., Cleveland, Ohio.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Bending
Eisler Engineering Co., Newark, N. J.

MACHINERY—Wire Drawing
Aetna-Standard Engineering Co., Youngstown, Ohio.
American Insulating Mach'y Co., Phila., Pa.
Eisler Engineering Co., Newark, N. J.
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Fdry & Mach. Co., Trenton, N.J.
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Foundry & Machine Co. Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Wire Forming
Eisler Engineering Co., Newark, N. J.
National Mach'y Exch. (Used), New York, N.Y.
Nilson Machine Co., A. H., Bridgeport, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Wire Rope
New England Butt Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wood Screw
National Mach'y Exch. (Used), New York, N.Y.

MACHINERY—Wrapping Straight Lengths and Tubing
Terkelsen Machine Co., Boston, Mass.

MACHINERY—Wrapping Wire Coils
Angier Corporation, Framingham, Mass.
Terkelsen Machine Co., Boston, Mass.

MATERIAL HANDLING EQUIPMENT
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, O.

MATERIAL—Resistance Heating Strand
Trauwood Engineering Co., Cleveland, Ohio.

MILLS—Tandem, Rolling & Edging
Torrington Mfg. Co., Torrington, Conn.

NAILS—Wire
American Steel & Wire Co., Cleveland, Chicago, New York
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling, John A. Sons Co., Trenton, N. J.
Wickwire Brothers, Inc., Cortland, N. Y.
Wickwire-Spencer Steel Division of Colorado Fuel & Iron Corp., Buffalo, N. Y.
U. S. Steel Export Co., New York, N. Y.

NICKEL SILVER AND PHOSPHOR BRONZE—Rod, Wire and Strip
Eastwood-Nealley Corp., Belleville, N. J.
Hudson Wire Co., Ossining, N. Y.

OVENS—Cable Lacquering
American Insulating Mach'y Co., Phila., Pa.
Industrial Ovens, Inc., Cleveland, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.

OVENS—Dehydrogenizing
Carl-Mayer Corp., The, Cleveland, Ohio.
Industrial Ovens, Inc., Cleveland, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.

OVENS—Industrial
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Industrial Ovens, Inc., Cleveland, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.
Ross, J. O., Engr. Corp., New York, N. Y.

OVENS—Welding Rod Coating
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Industrial Ovens, Inc., Cleveland, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.
Ross, J. O., Engr. Corp., New York, N. Y.

PAINTS—Heat Resisting
American Chemical Paint Co., Ambler, Pa.

PANS—Lead and Spelter
National Annealing Box Co., Washington, Pa.

PANS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.

PAPER—Creped Wrapping
Angier Corp., The, Framingham, Mass.
Crepe-Kraft Company, The, Division National Waterproof Papers, Inc., Newark, N. J.
Terkelsen Machine Co., Boston, Mass.

PAPER—For Coil Wrapping and Corrosion Prevention
Angier Corporation, The, Framingham, Mass.
Crepe-Kraft Company, The, Division National Waterproof Papers, Inc., Newark, N. J.
Terkelsen Machine Co., Boston, Mass.

PAPER TESTERS—
Scott Testers, Inc., Providence, R. I.

PATENT ATTORNEYS—
Lancaster, Allwine & Rommel, Washington, D.C.

PICKLING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Oakite Products, Inc., New York, N. Y.
Parkin, Wm. M., Co., Pittsburgh, Pa.

PICKLING—Hooks, etc. Acid Resisting
Gordon, Clark E., Detroit, Mich.
Youngstown Welding & Engineering Company, Youngstown, Ohio.

PICKLING TANK LININGS—
Haveg Corp., Newark, Del.
Sauereisen Cements Co., Pittsburgh, Pa.

PIPES & FITTINGS—Acid Resistant
Haveg Corp., Newark, Del.

PLASTIC TESTERS—
Scott Testers, Inc., Providence, R. I.

PNEUMATIC CYLINDERS
Entwistle, James L. Co., Pawtucket, R. I.

POTS—Lacquer
Industrial Ovens, Inc., Cleveland, Ohio

POTS—Lead Melting
National Annealing Box Co., Washington, Pa.
Robertson, John, Co., Brooklyn, N. Y.

POWDER—Wire Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Miller, R. H., Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Potter, Neil C., Newark, N. J.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

PRESSES—Hydraulic and Mechanical
Robertson, John, Co., Brooklyn, N. Y.

PRESSES—Lead
Robertson, John, Co., Brooklyn, N. Y.

PRESSURE VESSELS—
National Annealing Box Co., Washington, Pa.

PULLERS AND GRIPS—For Wire
Morgan Construction Co., Worcester, Mass.
Scudder, E. J., Fdry & Mach. Co., Trenton, N.J.
Sjogren Tool and Machine Co., Auburn, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio.

PUMPS—Hydraulic
Robertson, John, Co., Brooklyn, N. Y.

REEL AND TENSION STANDS—
Davis, R. L. Electric Co., Wallingford, Conn.
Entwistle, James L., Co., Pawtucket, R. I.
Industrial Ovens, Inc., Cleveland, Ohio.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

REEL CRUTCHES—
Watson Machine Co., Paterson, N. J.

REELS & SPOOLS—Drawn Aluminum Alloy
Acrometal Products, Inc., Minneapolis, Minn.

REELS & SPOOLS—Annealing and Stranding
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

REELS & SPOOLS—Collapsible
Entwistle, Jas. L. Co., Pawtucket, R. I.

REELS & SPOOLS—Steel
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L., Mfg. Co., Rockford, Ill.
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

REELS AND SPOOLS—Shipping and Shop
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg., Co., The, Hazardville, Conn.
Clark, J. L., Mfg. Co., Rockford, Ill.
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
North Anson Reel Co., North Anson, Maine

REELS—Metal Bound
Durkee Mfg. Co., Pine River, Minn.
Hubbard Spool Co., Chicago, Ill.
North Anson Reel Co., North Anson, Maine

REELS—Takeoff
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg., Co., The, Hazardville, Conn.
Clark, J. L., Mfg. Co., Rockford, Ill.
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
North Anson Reel Co., North Anson, Maine

REELS—Vulcanizing & Impregnating
Apco Mossberg Co., Attleboro, Mass.
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

REELS—Wire Drawing
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

REELS—Wire Mill
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg., Co., The, Hazardville, Conn.
Durkee Mfg. Co., Pine River, Minn.
Howsam Spool Co., Aurora, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
North Anson Reel Co., North Anson, Maine

REELS & SPOOLS—Wooden
Acrometal Products, Inc., Minneapolis, Minn.
American Woodworking Co., Chicago, Ill.
Bridge Mfg. Co., Inc., The, Hazardville, Conn.
Durkee Mfg. Co., Pine River, Minn.
North Anson Reel Co., North Anson, Maine

REFRACTORIES—High Temperature
Norton Company, Worcester, Mass.

RESISTANCE HEATING—Annealing, Patenting, Etc.
Trauwood Engr. Co., Cleveland, Ohio.

ROD BAKERS—
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Rockwell, W. S., Co., Fairfield, Conn.
Ross, J. O., Engineering Corp., New York, N.Y.

RODS—Nickel Alloy
Eastwood Nealley Corp., Belleville, N. J.
International Nickel Co., Inc., New York, N.Y.

RODS—Stainless Steel
Armco Steel Corp., The, Middletown, Ohio.

RODS—Wire—Non-Ferrous
Eastwood Nealley Corp., Belleville, N. J.
Hudson Wire Co., Ossining, N. Y.
Platt Bros. & Co., The, Waterbury, Conn.

RODS—Wire, Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Indiana.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling's John A., Sons Co., Trenton, N. J.
Youngstown Sheet & Tube Co., Youngstown, O.

WHERE TO BUY, Continued

ROPE—Wire
American Steel & Wire Company, Cleveland, Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Roebling's John A., Sons Co., Trenton, N. J.
U. S. Steel Export Co., New York, N. Y.
Wickwire-Spencer Steel, Division of Colorado Fuel & Iron Corp., Buffalo, N. Y.

RUBBER AND RUBBER COMPRESSION TESTERS—
Scott Testers, Inc., Providence, R. I.

RUST PROOF COMPOUNDS—
(See Compounds—Rust Preventing)

RUST REMOVING COMPOUNDS—
(See Compounds—Rust Preventing)

SATURATION SYSTEMS—
Industrial Ovens, Inc., Cleveland, Ohio.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y Inc., Pawtucket, R. I.

SHEET—Steel
Armco Steel Corp., The, Middletown, Ohio.
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.
Youngstown Sheet & Tube Co., Youngstown, O.

SOAPS—Industrial and Wire Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Bick, Hans C., Inc., Reading, Pa.
Magnus Chemical Co., Garwood, N. J.
Miller, R. H. Co., Inc., Homer, N. Y.
Potter, Neil C., Newark, N. J.
Standard Industrial Compounds Co., Inc., Chicago, Ill.
Swift & Company, Chicago, Ill.

SOLVENT RESIN SYSTEMS—Experimental
Industrial Ovens, Inc., Cleveland, Ohio.

STAMPINGS—Steel
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

STRIP—Brass and Non-Ferrous
Hudson Wire Co., Ossining, N. Y.

STRIP—Steel
Armco Steel Corp., The, Middletown, Ohio.
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Roebling's, John A., Sons Co., Trenton, N. J.
Youngstown Sheet & Tube Co., Youngstown, O.

SWIFTS—Take-off
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Watson Machine Co., Paterson, N. J.

TANKS—Compound
Atlas Mineral Products Co. of Pa., Mertztown, Pa.
Haveg Corp., Newark, Del.
Watson Machine Co., Paterson, N. J.

TANKS—Pickling
Haveg Corp., Newark, Del.
Rockwell, W. S., Co., Fairfield, Conn.
Sauereisen Cements Co., Pittsburgh, Pa.

TANKS—Steel
Mossberg Pressed Steel Corp., Attleboro, Mass.
Rockwell, W. S., Co., Fairfield, Conn.
National Annealing Box Co., Washington, Pa.

TINSEL—Cords, Decorative
Hudson Wire Co., Ossining, N. Y.
Montgomery Co., The, Windsor Locks, Conn.
North American Philips Co., Inc., New York, New York

TINSEL—Electric Conductor
Hudson Wire Co., Ossining, N. Y.
Montgomery Co., The, Windsor Locks, Conn.
North American Philips Co., Inc., New York, New York

TINSEL—Electric Resistance
Hudson Wire Co., Ossining, N. Y.
Montgomery Co., The, Windsor Locks, Conn.
North American Philips Co., Inc., New York, New York

TINSEL—Lame, Silver and False Gold
Hudson Wire Co., Ossining, N. Y.
Montgomery Co., The, Windsor Locks, Conn.
North American Philips Co., Inc., New York, New York

TINSEL—Thread, Silver and False Gold
Hudson Wire Co., Ossining, N. Y.
Montgomery Co., The, Windsor Locks, Conn.
North American Philips Co., Inc., New York, New York

TINSEL—Thread, Decorative
Hudson Wire Co., Ossining, N. Y.
Montgomery Co., The, Windsor Locks, Conn.
North American Philips Co., Inc., New York, New York

TOOLS—Wire Cutting
Porter, H. K., Inc., Everett, Mass.

TRAMRAIL SYSTEMS—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.

TRAVERSES—For Reels
Entwistle, James L. Co., Pawtucket, R. I.
Hubbard Spool Company, Chicago, Ill.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

TRAVERSE MECHANISMS—
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc., Pawtucket, R. I.

TUBE BENDERS AND FORMERS—
Ruesch, H. J., Machine Co., Newark, N. J.

VALVES AND FITTINGS—Acid Resistant
Haveg Corp., Newark, Del.

VULCANIZERS—
Watson Machine Co., Paterson, N. J.

VULCANIZING PANS—
American Insulating Mach'y Co., Phila., Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.

WELDERS—Spot and Butt
Eisler Engineering Co., Newark, N. J.
Micro Products Co., Chicago Ill.

WIND-UP AND UNWIND SYSTEMS—Continuous
American Insulating Mach'y Co., Phila., Pa.
Davis R. L. Electric Co., Wallingford, Conn.
Entwistle, James L., Co., Pawtucket, R. I.
Industrial Ovens, Inc., Cleveland, Ohio.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc., Pawtucket, R. I.

WIRE—Aluminum
Aluminum Co. of America, Pittsburgh, Pa.
Malin & Co., Cleveland, Ohio.

WIRE—Cast
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Cold Heading
Armco Steel Corp., The, Middletown, Ohio.
American Steel & Wire Co., Cleveland-Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.
U. S. Steel Export Co., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Electric
Hudson Wire Co., Ossining, N. Y.
Malin & Co., Cleveland, Ohio.

WIRE—Enameled for Coils
North American Philips Co., Inc., New York, New York
Winsted Div. of Hudson Wire Co., Winsted, Conn.

WIRE—Manufacturers
Armco Steel Corp., The, Middletown, Ohio.
American Steel & Wire Co., Cleveland-Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
U. S. Steel Export Co., New York, N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Wickwire Spencer Steel Div. of Colorado Fuel & Iron Corp., Buffalo, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Music
American Steel & Wire Co., Cleveland-Chicago, New York
Columbia Steel Co., San Francisco, Calif.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Malin & Co., Cleveland, Ohio.
U. S. Steel Export Co., New York, N. Y.
Wickwire-Spencer Steel Division of Colorado Fuel & Iron Corp., Buffalo, N. Y.

WIRE—Nickel & Nickel Alloy
Eastwood-Nealley Corp., Belleville, N. J.
International Nickel Co., Inc., New York, N.Y.

WIRE—Nickel Silver and Phosphor Bronze
Eastwood-Nealley Corp., Belleville, N. J.
Hudson Wire Co., Ossining, N. Y.
Malin & Co., Cleveland, Ohio.

WIRE—Non-Ferrous to Specification for Special Purposes
Eastwood-Nealley Corp., Belleville, N. J.
Hudson Wire Co., Ossining, N. Y.
North American Philips Co., Inc., New York, New York.
Winsted Div. of Hudson Wire Co., Winsted, Conn.

WIRE—Spring
American Steel & Wire Co., Cleveland-Chicago, New York.
Armco Steel Corp., The, Middletown, Ohio.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Indiana.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
U.S. Steel Export Co., New York, N. Y.
Wickwire-Spencer Steel Division of Colorado Fuel & Iron Corp., Buffalo, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Stainless Steel
American Steel & Wire Co., Cleveland-Chicago, New York
Armco Steel Corp., The, Middletown, Ohio.
Columbia Steel Co., San Francisco, Calif.
Firth Sterling Steel & Carbide Co., McKeesport, Pa.
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
U. S. Steel Export Co., New York, N. Y.

WIRE—Steel—Also Coppered Steel—Also Galvanized Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Indiana.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
U. S. Steel Export Co., New York, N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Straightening and Cutting—
Pittsburgh Cut Wire Co., Pittsburgh, Pa.
Wickwire Brothers, Inc., Cortland, N. Y.

WIRE—Zinc
Platt Bros. & Co., The, Waterbury, Conn.

WIRE CLOTH—Industrial
Roebling's John A., Sons Co., Trenton, N. J.
Wickwire Brothers, Inc., Cortland, N. Y.
Wickwire-Spencer Steel Division of Colorado Fuel & Iron Corp., Buffalo, N. Y.

WIRE TESTERS—
Scott Testers, Inc., Providence, R. I.

WIRE, WEAVING—Non-Ferrous
Hudson Wire Co., Ossining, N. Y.

WRAPPING PAPER—Creped
Angier Corporation, Framingham, Mass.
Crepe-Kraft Company, The, Division National Waterproof Papers, Inc., Newark, N. J.

YARNS & TAPES—
Du Pont de Nemours, E. I., Co., Wilmington, Delaware
Owens Corning Fiberglas Corp., Toledo, Ohio.
Twitchell, E. W., Philadelphia, Pa.

YARN TESTERS—
Scott Testers, Inc., Providence, R. I.

The WATSON MACHINE COMPANY

ESTABLISHED 1845

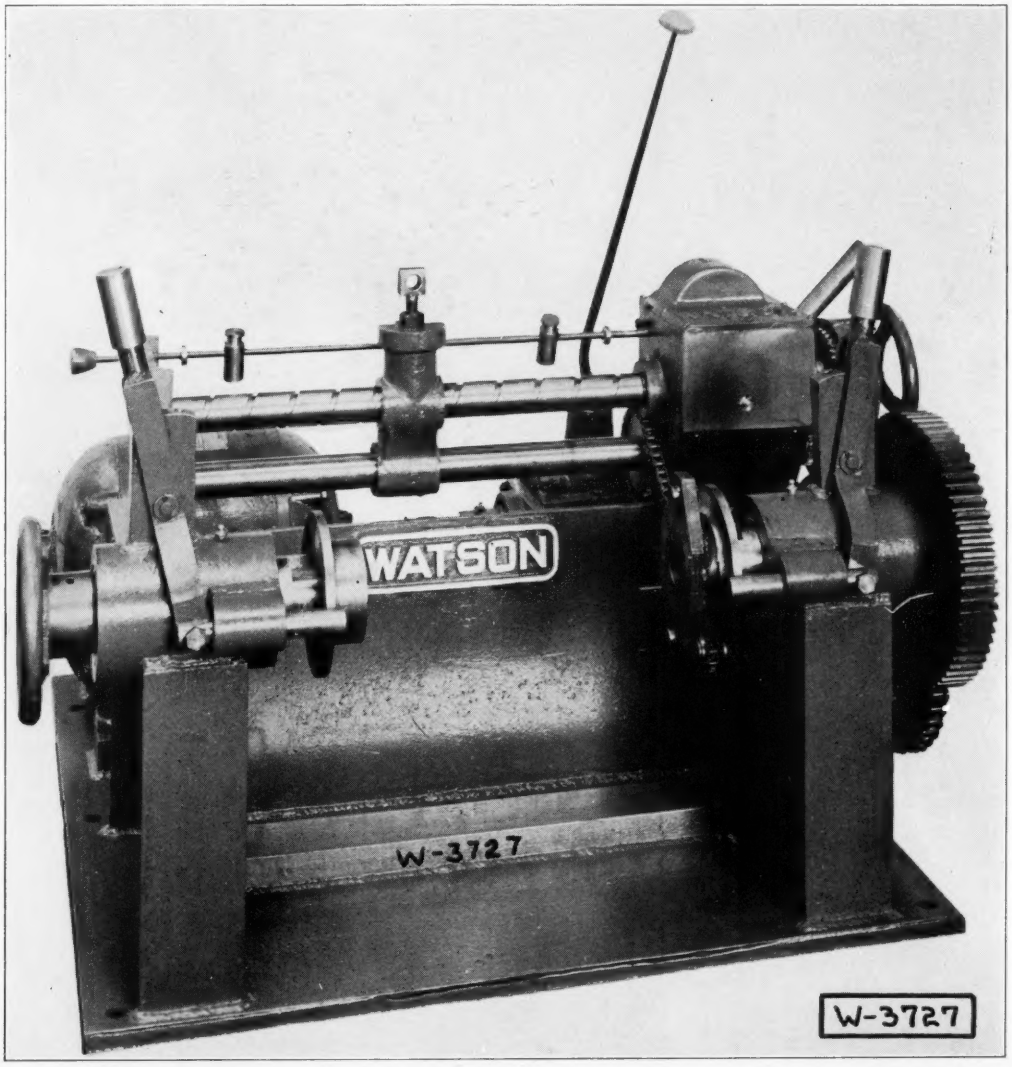
PATERSON 3, NEW JERSEY, U. S. A.

WATSON

ELECTRICAL WIRE AND CABLE, WIRE ROPE AND CORDAGE MACHINERY

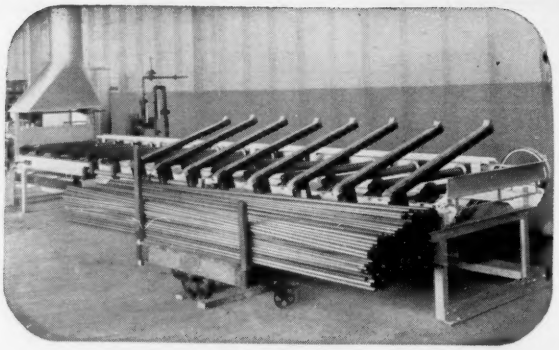
"SHAFTLESS" ARMOR WIRE WINDERS

Heavy Duty, for winding from coil after "straightening." Units arranged to suit users spools. "Shaft" models also available. Rugged all steel and ball bearing construction. Motor mounted. Multi-Speed by hand shift slide gear transmission. Same unit can accommodate spools of varying dimensions. Fully adjustable (at stand-still or in operation) automatic traverse with 20 lay values by selector handle setting. Various guides.

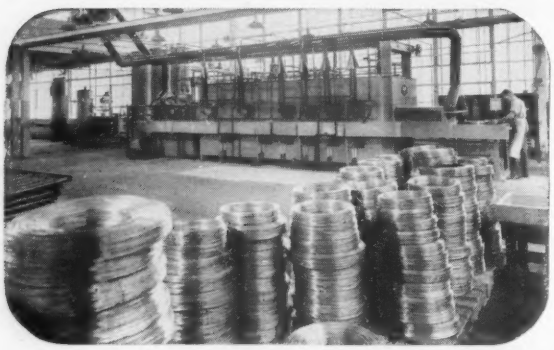


Unit W-3727 shown above loads spools to 24" flange diameter. 4-Speeds from 50 to 200 RPM with single speed motor. Suits spools from 8" to 11" width. Tungsten carbide traverse wire guide.

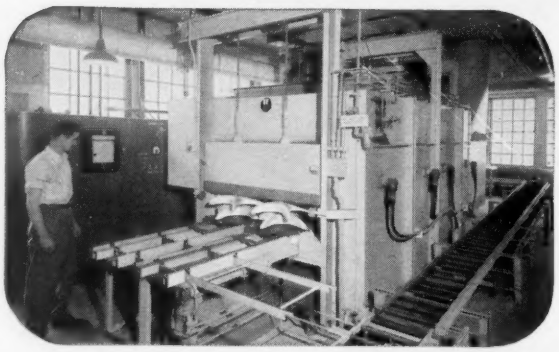
Continuous Annealing subjects the entire length and width of the strip to same time and temperature treatment, greatly improving drawing qualities.



Bright Annealing Tubing. Discharge end of an EF continuous special atmosphere furnace bright annealing 40,000 lbs. steel tubing per day.



Clean Annealing Wire in an EF gas fired recuperative radiant tube type special atmosphere continuous roller hearth furnace. Handles coils up to 30" diameter.



Brazing and Heat Treating operations are carried out in above furnace. Other interesting installations are shown in Bulletin No. 461. Send for copy.

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Write for Bulletin 461. It illustrates 17 sizes and types—and describes each briefly.

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